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COMPARISON OF THREE METHODS OF READING INSTRUCTION (ITA, DMS, TO), RESULTS AT THE END OF THIRD GRADE. FINAL REPORT.

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THREE METHODS OF TEACHING READING, THE INITIAL TEACHING ALPHABET (ITA), THE DIACRITICAL MARKING SYSTEM (DMS), AND THE TRADITIONAL ORTHOGRAPHY (TO) METHOD WERE COMPARED IN 21 FIRST GRADES FOR THE THIRD YEAR. A FOLLOWUP STUDY WAS MADE OF THE NEW DMS GROUP FOR A SECOND YEAR. TWO HUNDRED NINETY-NINE STUDENTS OF AN ORIGINAL SAMPLE OF 393 STUDENTS WERE COMPARED. IN DECEMBER, THE GATES-MCGINITIE READING TEST WAS ADMINISTERED, AND IN MAY THE STANFORD ACHIEVEMENT TEST WAS GIVEN. A SUBSAMPLE OF STUDENTS TOOK THE GILMORE ORAL READING TEST. MEAN SCORES, STANDARD DEVIATIONS, ANALYSIS OF VARIANCE, AND CORRELATION WERE USED TO ANALYZE THE DATA. THERE WERE NO SIGNIFICANT DIFFERENCES AMONG THE GROUPS ON ANY TEST SCORE EXCEPT THE VOCABULARY SUBTEST OF THE GATES-MCGINITIE TEST. ON THIS SUBTEST, THE DIFFERENCE BETWEEN ITA AND DMS WAS SIGNIFICANT AT THE .05 LEVEL. BRIGHT STUDENTS DID SIGNIFICANTLY BETTER REGARDLESS OF METHOD. GIRLS DID SIGNIFICANTLY BETTER THAN BOYS REGARDLESS OF METHOD. IT WAS CONCLUDED THAT SPECIAL ALPHABETS LIKE THE ITA AND DMS DID NOT GIVE SUPERIOR READING ACHIEVEMENT TO BEGINNING READERS WHEN COMPARED TO TRADITIONAL BASAL READERS. TABLES AND REFERENCES ARE INCLUDED. (BK)

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FINAL REPORT
Project No. 3050
Contract No. OE 6-10-022

# COMPARISON OF THREE METHODS OF READING INSTRUCTION

## (ITA, DMS, TO)

## Results at the End of Third Grade

September 1967

RE 001 051

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# COMPARISON OF THREE METHODS OF READING INSTRUCTION

PA 24

BR-5-0543

Project No. 3050
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# INTRODUCTION

This project is the 3rd year continuation of one of the 27 USOE sponsored first grade reading methods studies.

The three methods that we chose to study were the Initial Teaching Alphabet (ITA), the Diacritical Marking System (DMS), and Traditional Orthography (TO) as represented in a basal reading series.

The first year results were turned in by the same principal investigator in USOE Project 2745. In this project, there were seven first grades in each of three methods:

1. The Initial Teaching Alphabet, or ITA group, which used the Mazurkiewicz and Tanizers materials.
2. The Basal reader group, sometimes called TO for Traditional Orthography, which used the Sheldon readers published by Allyn Bacon.
3. The Diacritical Marking System group, sometimes called the DMS group which used a special set of the Sheldon readers to which diacritical marks had been added to every word for the purpose of increasing phoneme-grapheme regularity.

Results at the end of the first year as reported in USOE Project 2745 showed that there were no significant differences between any of the methods on any sub-test of the Stanford Achievement Test or on any part of the Gilmore Oral Reading Test

that was used. There were significant differences favoring the ITA on length of stories written and on the oral reading on a list of phonetically regular words.

At the end of the second year, an extensive interim report was prepared dated December 1966 and entitled Comparison of Three Methods of Reading Instruction (ITA, DMS, TO) Results at the End of Second Grade. That report was really intended as a final report for the end of the second year, but the project was extended for one further year and instead of writing a new grant, additional money was given to Project No. 3050; and hence, this becomes the final report though it will be much less voluminous than last year's interim report. One of the reasons for its being less voluminous is that last year during the second grade we had $30,000 to work with and this year the project funding was cut to $10,000.

In addition to following up the 21 first grade classes during their second year, the interim report also gave the results of a new experimental group which we shall call "New DMS" which started seven additional first grade classes using a unique set of materials prepared by the project director and supervisor. These New DMS-taught children were then compared with the preceding years' first grade children. By and large, the reports showed that there were no significant differences in any of the project measures of reading achievement.

The interim report also showed that there were no differences at the end of second grade between the original three groups. This was particularly significant in the light of the criticisms leveled at this and other USOE sponsored 1st grade ITA projects which were to the effect that it was not fair to test ITA-taught children with tests printed in Traditional Orthography. The complainers stated that ITA-taught children should have been tested in ITA. However, at the end of second grade, almost all of the ITA children were transferred out of ITA and were reading TO in their regular classrooms and still significant differences did not appear either positively or negatively. In our project, the only significant change was that spelling which at the end of first grade was inferior largely because the children were taught to write in ITA now returned to normal and there was no longer a significant inferiority in spelling. The ITA-taught children continued to write longer stories and do significantly better on a list of phonetically regular words though their achievement on all Stanford sub-tests was not significantly superior to the other two methods groups.

This year with the drastic cut in funds, the 2nd new DMS group was discontinued and our plans for having a further revision of new DMS materials was stopped. This was particularly disappointing in that we had excellent cooperation promised from the schools and some educational publishers in terms of

supplying material for our attempt to develop this new method. Though differences between the groups taught by the old DMS and the new DMS methods were not significant, there were some tendencies for the new DMS scores to be improved, e.g., the adjusted mean raw score of the Stanford Paragraph Meaning changed from 18.6 to 19.8 while the Spelling score improved from 9.7 to 12.1 (significant at .05) Gilmore accuracy score improved from grade level 2.5 to 2.9 and Gilmore rate and words per minute improved from 45.9 to 52.4. On the Phonetic Words test the new DMS group improved from 4.6 to 13.0 (significant at .05) and on the Gates word pronounciation they improved from 10.0 to 14.7. We felt that this promising improvement could possibly be developed even further, but it was impossible without research support during this past year.

## Reports from Other ITA Research Projects

Perhaps the most interesting research report that we reviewed was from London, written by Nicholas J. Georgiades, who at the time of the experiment was a Research Officer at the Reading Research Unit, Institute of Education, University of London which is headed by John Downing (3). Georgiades' report which was entitled, "The Initial Teaching Alphabet In Remedial Reading Groups: An Experiment," was a carefully designed study to test the effectiveness of ITA over Traditional Orthography in several remedial reading situations. Six schools scattered

in different geographical regions were balanced between Central organization and Peripatetic organization which means that either the children came to a reading center for small group instruction or the teacher came to the school. There were a total of 81 children in the experiment, 51 boys and 30 girls. Half of the students in each school system were put into ITA experimental classes and the other half was put into TO control classes. Instruction lasted for one academic year beginning in October 1965 and terminating in July 1966. Some of the reading test measures were the Burt Graded Word Recognition Test, the Neale Analysis of Reading Achievement, the Schonell Graded Word Recognition Test, the Schonell Spelling Test, and an attitude scale.

Both graphs and tables show the two groups to be very close on most measures and Georgiades concludes (p.88) "Both groups made progress under the impact of remedial regimes. Neither group, however, made significant greater gains than the other."

This is the first study that we know of coming from the Reading Research Unit headed by Downing which shows no significant difference between ITA-taught populations and TO-taught populations.

Last year we reported a study by Swales done in England which showed no difference between normal classes but all of

the other English reports have been giving rather glowing results favoring ITA(8) It seems to us that this study by Georgiades is considerably more carefully controlled than some of the earlier English reports, and this is perhaps why these results are in harmony with the majority of the American findings.

Second Grade USOE Studies

Some of the second grade studies results were reported during the year. Robert B. Hayes and Richard Wuest, who compared ITA and Basal as part of their study, reported that at the end of second grade these Scott-Foresman taught children scored 2.9 on the Stanford Paragraph Meaning sub-test while the ITA-taught children (Mazurkiewicz materials) received 3.1(6)Though there were lack of significant differences, the authors pointed out that the Scott-Foresman materials did better with the lower third IQ group. On a sub-sample of both populations, there was no difference on the Gilmore Oral Reading Test or on a written language measure. ITA taught children did do significantly better on the Gates and Fry Word test.

Another of the USOE first grade studies reported at the end of the second year was one conducted by Harry Hahn (5). He did not find any significant differences between ITA and Basal reader groups on the Stanford sub-tests of word meaning, paragraph meaning, science concepts, language, or the arithmetic

sub-tests. There were differences favoring the ITA group at the 5 per cent level of confidence in spelling and word study. No differences were found on the Gilmore Oral Test, but ITA-taught children did do significantly better on the Gates Word list (Fry list scores were not reported). The writing sample did not show any differences in story length or number of different words, and a mechanics ratio scale favored the basal reader group. Hayes concluded "It doesn't appear in this study that the use of the Initial Teaching Alphabet has given children an advantage over those using a comparable instructional approach with Traditional Orthography."

In a third ITA vs. TO study conducted by Albert Mazurkiewitz, he did not report any significant differences between his ITA-taught children and TO-taught children on any sub-test of the Stanford Achievement test, nor did he find any significant difference on the Gilmore Oral Test or the Gates Word list; however, there was a significant difference favoring ITA children on the Fry Phonetically regular words test(7). Despite these test results, Mazurkiewitz somewhat incredibly concludes "Children using ITA materials: 1. Advance more rapidly in reading and writing experiences; achieve significantly superior reading skill at an earlier time; read more widely."

Since the reporting of our last interim report results,

the University of Minnesota Coordinating Center Report by Bond and Dykstra has become available which reanalyzed the data from all of the first grade studies. Though the study went back and worked with the actual data cards submitted to it and recomputed means and tests of significance, they essentially did not reverse any of the findings noted in last year's study. It is indeed a shame that the Coordinating Center was not financed by the USOE to continue the coordination through the second and third years of the first grade studies. We found their services extremely helpful and the measure of control which they helped to exert over all of the investigators undoubtedly contributed a great deal to the replicability of our results as well as to the total value of the project both to the U. S. Office of Education and to the education profession at large. I'm happy to report that their complete final report has been given rather wide publicity by virtue of its being published in its entirety in the Reading Research Quarterly of the summer of 1967 and the International Reading Association has offered to make copies of this special issue available to anyone for $2.50 (8).

Finally, we are brought down to earth somewhat by an educational psychologist, William Gillooly, who delved into the history books, more specifically into the annual reports

of the School Committee of the City of Boston for the years 1872 to 1877. These are the years in which Boston became enchanted with a "Pronouncing Orthography," a special more or less phonetically regular type, in which it had some of its beginning reading textbooks printed. At first, the city tried it out in a few schools and due to enthusiastic reports, it gradually spread to the entire city of Boston only to meet an early decline when the educators found that when everybody was using the new Pronouncing Orthography it was no longer new and unique and results were not any better than the traditional orthography. It apparently has cost the U. S. Government several hundred thousand dollars and many educators and publishers more in terms of time and money to find out essentially the same thing nearly a hundred years later. This could be a rather strong argument for better teaching of the history of education.

Purpose

The main purpose of this third year of the project was simply to follow up the twenty-one original first grades during their third grade year, and to follow up the new DMS group at the end of its second year. As stated earlier, it had been a major point of public controversy that ITA-taught children could not be expected to perform well on tests until they had fully

transferred to the traditional alphabet. Our results at the end of the second year tended to answer this criticism, but our results at the end of this year should be much more conclusive.

## METHOD

The initial problem this year was simply to find the children. Apparently, mobility of children in suburban schools is a good deal greater than we had originally expected. Coupled with this problem, one of the school districts tended to put many of its primary children into an ungraded situation which meant that there were various combinations of grades one and two and grades two and three. This necessitated a good deal more of trnasfer at least within the school than maintaining intact classes or even traditional grouping. Though we were able to locate a somewhat higher number, our final testing with complete test results consisted of 299 children. This does not compare too favorably with 352 children at the end of second grade and 393 children at the end of first grade. These numbers are for the original twenty-one classrooms. Though we did not pursue the children with the diligence of a bill collector, we still used what might be considered reasonable effort. For example, we set up a special testing situation for seven children in an elementary school which was not even in the original project. We also found that some school personnel while still friendly and cooperative had lost some of the 100-per-cent-cooperation spirit exhibited during the first year of the research project.

The first testing situation was in December, 1966, when all 3rd grade children were given the Gates-McGinitie Reading Test. This test was not used for the second grade new DMS group. The third grade original twenty-one classrooms were tested in December with the Gates-McGinitie Primary C Form I which is sub-titled Vocabulary and Comprehension for Grade 3.

At the end of the year, approximately May 1, all students were tested on the Stanford Achievement Test Primary II by Truman L. Kelley, Richard Madden, Eric Gardner, Herbert C. Rudman, published by Harcourt, Brace, and World, Inc., New York, New York, 1964 (Form W). This was the main silent reading test. All students at the end of 3rd grade used Form X while all students at the end of 2nd grade used Form W.

A sub-sample was also tested with an oral reading test. We used the same children in the sub-sample as were used in the first and second grade, but additions were made to the groups by random selection as per instructions from the University of Minnesota Coordinating Center during the second grade of the project. This sub-sample was given the Gilmore Oral Reading Test by John V. Gilmore, published by Harcourt, Brace, and World, Inc., 1951 (Form A).

The data from all tests was punched into IBM data cards and a sample set has been sent to the University of Minnesota Coordinating Center so that duplicates of these cards may be

had by anyone wishing to replicate our results.

By and large, the statistical analysis was the same as used in preceding years. We have presented in the appendix extensive tables developed by the computer giving Mean, Standard Deviation, Standard Error of the Mean, Sample Size, Maximum, Minimum, and Range for each classroom group. These classroom groups are the original first grade classrooms though the children are now scattered into a large number of classrooms. Analysis of variance was the principal test of significance and a three-way analysis of variance was computed between method, IQ, and sex. The IQ divisions were determined by dividing the total group into approximately equal thirds. The range of the top 1/3 was IQ 106 to 144; middle 1/3 from 96 to 105; bottom 1/3 was 55 to 95.

Following the pattern of preceding years, the new DMS group now at the end of its second year was compared with last year's three groups, the old DMS, ITA, and TO at the end of their second year.

Since we had a shrink in population, we were concerned that the shrinking could have somehow given us different populations in terms of learning ability. As a check on this, we calculated the IQ of the remaining children based on their first grade IQ tests.

We also computed a giant correlation matrix with 71 variables which correlated 3rd grade test data with earlier tests and measures. Second grade scores with the new DMS scores were also correlated with other second grade and first grade data.

Class sizes were calculated for the first two years. We continued this policy for the third year and found that the classes in which the child spent the third grade were as follows: DMS 27.5, TO 25.1, ITA 25.3. Likewise, we also calculated the number of days absence during the third grade for our population and found out that the DMS students averaged 5.3 days of absence, the TO group 4.2, and the ITA 4.6. Further details on these measures can be seen in Appendix Table 23.

We also collected some description of the teachers similar to the first year project and this data can be seen in Appendix Table 24.

The new DMS classes in second grade were compared with last year's second grades and found that the class size of the new DMS classes was 26.8, and their number of days absent was 6.0. Both statistics compare very closely with the other second grades. Data on the teachers of the new DMS group were also collected to last year and data can be found in Appendix Table 26.

# RESULTS

This first group of results will apply to the original twenty-one classrooms at the end of their third year.

## IQ of Remaining Children

In order to ascertain the change, if any, due to attrition of our population between first grade and third grade, we calculated IQ's for the remaining twenty-one classroom groups. We have found that there was essentially no change, e.g., the original DMS mean IQ was 97.7 and at the end of third grade it was 97.6. The original TO mean IQ was 101.3, and at the end of third grade it was 102.23. The original ITA IQ was 98.2, and at the end of third grade it was 99.37. This showed us that in terms of ability at least we were dealing with essentially the same population that we started with. Details of the test results can be found in Appendix Tables 1 and 2.

## Gates-McGinitie December Testing

The first reading test used in the third grade was the Gates-McGinitie Test described earlier used in December 1966 or mid-third grade. The Comprehension Mean Raw Scores for the three groups were DMS 24, TO 28, ITA 28. Analysis of variance showed no significant difference in the scores. The mean scores for the vocabulary sub-section of the Gates-McGinitie were DMS 30, TO 32, ITA 34. This difference between DMS and ITA were significant at the .05 level by analysis of variance.

Details of the test results can be found in Appendix Tables 3 and 4.

Stanford Achievement Test

The main battery given at the end of third grade was the Stanford Achievement Test. Results are given in Table 1 in both raw score and grade score. There were no significant differences between any of the group means. As tests were given in late April and early May a grade score of 3.7 or 3.8 would be appropriate and practically none of the sub-tests vary over 2/10 of a grade placement from that norm.

We thought it might be interesting to look at growth between the Stanford Primary II given at the end of second grade and at the end of third grade. By and large, we witnessed a steady growth in all of the sub-tests. Raw scores for this growth analysis can be seen in Appendix, Table 5. Grade level scores for this growth analysis can be seen in Appendix, Table 6.

Gilmore Oral Reading Test at End of Third Grade

A sub-sample of approximately thirty-four students in each of the three methods groups was given the Gilmore Oral Reading Test at approximately the same time (May 1967) as the Stanford Achievement Test was administered. Analysis of variance showed that there were no significant differences between either the accuracy score or the rate score. Results of the Gilmore can be seen in Table 2.

Table 1

Comparison of Mean Raw Scores and Mean Grade Scores on the Stanford Achievement Test Primary II Form X Given at the End of 3rd Grade
N = 21 Classrooms

| | DMS | | TO | | ITA | |
|---|---|---|---|---|---|---|
| | Raw Score | Grade Score | Raw Score | Grade Score | Raw Score | Grade Score |
| Word Meaning | 25.43 | 3.7 | 26.01 | 3.8 | 25.78 | 3.8 |
| Paragraph Meaning | 39.63 | 3.4 | 43.56 | 3.8 | 41.66 | 3.6 |
| Sc. & Soc. St. Concepts | 24.06 | 4.0 | 24.47 | 4.0 | 23.22 | 3.8 |
| Spelling | 20.49 | 3.7 | 21.44 | 3.8 | 21.75 | 3.9 |
| Word Study Skills | 42.83 | 3.6 | 45.36 | 3.9 | 47.49 | 4.2 |
| Language | 45.61 | 3.6 | 48.59 | 3.9 | 48.44 | 3.8 |
| Arith. Computation | 31.77 | 3.5 | 32.18 | 3.5 | 32.00 | 3.5 |
| Arith. Concepts | 25.95 | 3.4 | 29.22 | 4.0 | 27.86 | 3.8 |

Analysis of variance among group means: not significant

Table 2
Oral Reading Test Results at the End of
3rd Grade on a Randomly Selected Subsample

| Group | DMS N=34 | TO N=34 | ITA N=33 |
|---|---|---|---|
| Gilmore Accuracy (grade score) | 5.56 | 5.87 | 6.49 |
| Gilmore Rate (wpm) | 101.76 | 99.35 | 90.09 |

Analysis of variance among methods: not significant

Table 3
Mean Scores of A Sub-Sample of the Third Grade
Population on A Writing Sample

| Group | DMS N=29 | TO N=31 | ITA N=29 |
|---|---|---|---|
| Number of Running Words | 75.93 | 81.26 | 100.14 |
| Percent of Words Spelled Right | 89.90 | 88.64 | 89.21 |

Analysis of variance among methods: not significant

## Writing Sample

A sample of children's writing was taken from each of the three methods'groups. Though the writing sample was scored on length or number of running words and per cent of words spelled correctly. The analysis of variance showed that there were no significant differences between the three methods groups on either of these measures. The story length as measured by number of running words was DMS 76 to 81, ITA 100. The percentage of correctly spelled words for the three groups was DMS 90,TO 89, ITA 89.

## New DMS Methods at End of Second Grade

In addition to following the three original groups, namely, seven classrooms each of TO, ITA, and DMS which are now at the end of the third grade. We also followed the new DMS group through the end of the second grade. As should be remembered, this DMS group started in the fall of 1965 at the beginning of first grade. In other words it is one year behind the original three groups. It used a different type of DMS approach, namely, not the Sheldon readers but some new material developed for the project only. In second grade this group was not held intact and did not have any additional DMS materials. They used the regular basal materials that other children in their school district were using.

The main measure of reading achievement was in silent

reading as measured on the Stanford Achievement Test. Table 4 shows that this group did about as well as the other methods at the end of second grade. When we look at the adjusted mean scores (adjusted by IQ through an analysis of covariance) we see that there are no significant differences for the sub-tests of word meaning, paragraph meaning, science and social studies concepts, spelling, word study skills, language, arithmetic computation, and arithmetic concepts. In fact, there was only one unadjusted mean score which was significant and that showed that the new DMS and TO were significantly superior to the old DMS at the .05 level. Table 4 shows the details of these test results. A sub-sample of the new DMS population was given the Gilmore Oral Reading Test and on the accuracy sub-test the new DMS group scored 5.0 while last year's DMS group scored 4.3, the TO group scored 4.5, and the ITA group scored 4.5. These are grade level scores. On the Gilmore rate test the words per minute for the new DMS was 90.4, while last year's DMS group scored 84.0, TO 85.8, and ITA 79.1. None of the differences between scores on the Gilmore are significant.

A sub-sample of the new DMS group at the end of second grade was also given a writing sample. On story length the new DMS group scored 54.3 while the old DMS group at the end of second scored 39.1, TO scored 51.9 and ITA scored 69.8; this difference was significant at the .01 level.

Table 4
Comparison of 1966-67 2nd Grades with 1965-66 2nd Grades
Stanford Achievement Test - Primary II
Raw and Adjusted Mean Scores

| Test | Word Meaning | | Paragraph Meaning | | Science and Social Studies Concepts | |
|---|---|---|---|---|---|---|
| Method | Mean | Adjusted Mean | Mean | Adjusted Mean | Mean | Adjusted Mean |
| DMS (64-65) | 17.44 | 18.24 | 27.22 | 28.64 | 18.93 | 20.32 |
| TO | 20.33 | 20.16 | 33.32 | 33.01 | 19.56 | 19.26 |
| ITA | 20.47 | 21.14 | 31.17 | 32.35 | 19.73 | 20.89 |
| DMS (65-66) | 19.95 | 18.65 | 33.34 | 31.04 | 20.36 | 18.13 |
| F | 2.66 | 2.75 | 3.12* | 1.59 | .36 | 1.68 |

| Test | Spelling | | Word Study Skills | | Language | |
|---|---|---|---|---|---|---|
| Method | Mean | Adjusted Mean | Mean | Adjusted Mean | Mean | Adjusted Mean |
| DMS (64-65) | 13.07 | 13.86 | 36.82 | 37.96 | 35.99 | 37.33 |
| TO | 14.46 | 14.30 | 39.83 | 39.59 | 39.17 | 38.88 |
| ITA | 15.72 | 16.37 | 42.30 | 43.25 | 36.85 | 37.97 |
| DMS (65-66) | 15.55 | 14.28 | 40.66 | 38.82 | 39.76 | 37.59 |
| F | 1.07 | .94 | 2.62 | 2.90 | 2.06 | .38 |

| Test | Arithmetic Computation | | Arithmetic Concepts | |
|---|---|---|---|---|
| Method | Mean | Adjusted Mean | Mean | Adjusted Mean |
| DMS (64-65) | 19.19 | 20.20 | 15.86 | 17.26 |
| TO | 21.26 | 21.04 | 18.37 | 18.07 |
| ITA | 19.21 | 20.06 | 16.53 | 17.70 |
| DMS (65-66) | 19.31 | 17.67 | 19.49 | 17.23 |
| F | .39 | .66 | 1.71 | .13 |

* F of 3.01 is significant at .05 thus no adjusted means are significant and only one unadjusted mean was significant. That shows the new DMS and TO superior to old DMS in paragraph meaning.

## Correlations of Tests, Data, and Other Variables

We computed a giant correlation matrix of 71 variables which included all of the tests that were given to all pupils at the beginning of instruction, end of first grade, end of second grade, and end of third grade of the original 21 classes. This matrix also includes various other data about teachers' age, etc.

Since this large matrix is almost too big to look at (71 squared equals 5,041 correlations) we have followed our practice in preceding years of extracting one line, namely, that line which is the Stanford Achievement Test, paragraph meaning sub-test at the end of third grade. This data appears in Appendix Table 27 and will be commented on in the discussion section. The concept of significance of a correlation is sometimes difficult to handle, but for those who are interested, a correlation of .55 is significant at the .01 level. By and large, the significant correlations tended to be only between other parts of the group achievement test in third grade as well as other group silent reading tests given at the end of first grade, in mid-second grade, at the end of second grade, and in mid-third grade.

Analysis by IQ Level and Sex

The raw scores of the Stanford Paragraph Meaning test were divided into three IQ groups, three methods groups and two sexes. See Appendix Table 30 for mean score for each cell. The main effect for IQ was significant at the .01 level which means that bright children significantly did better than dull students regardless of method.

There was also a main effect for sex which means that girls read significantly better than boys regardless of method. There were no other significant differences or interactions.

## DISCUSSION

In general, our results this year are probably less valid than the preceding two years. After all, it has been at least a full year since instruction in the methods has been given. DMS children, for example, at the end of third grade have not seen a DMS mark for two years and this also applies to a high percentage of the ITA children though some ITA children were taught with the regular ITA materials until mid-second grade and a few until near the end of second grade. However, no ITA children received any ITA during the third grade. Hence, there is a good deal of confounding by different methods that have been taught to these children including the fact that they had a wide variety of teachers as the groups are no longer intact. The chief importance of carrying this study through the third grade is to answer the criticisms of some of the ITA people who felt that it was not fair to test ITA children with TO tests at the end of first grade. Now there can be no criticism of the fact that the children have not transferred from ITA. Some ITA proponents felt that though reading test differences did not show up at the end of 1st grade or 2nd grade, they would somehow appear at the end of 3rd grade.

Even though we had a moderate amount of attrition, we had several reasons for thinking that we are dealing with

essentially the same population or that the attrition operated in the random fashion from all groups. Our reason for feeling this, is first, that the IQ level remained essentially the same; and secondly, our achievement measures of reading, arithmetic, spelling, etc., were essentially the same.

December of 3rd Grade Mean Scores

The December testing of the third grade groups which showed the Gates-McGinitie vocabulary score of the ITA group to be significantly superior to the DMS at the .05 level while not in line with second grade scores does have some precedent in other ITA studies which were reported at the end of first and second grades which tended to show words in isolation particularly on the oral test to favor the ITA-taught children.

End of 3rd Grade Mean Scores

The Stanford Achievement Test which we used as our main battery continued to show no significant difference between the three groups. If we had suddenly found some significant difference between second grade and third grade results, we would have been hard put to give any explanation for it. However, these no difference results are in line with not only our own earlier study, but most of the results reported at the end of second grade by the other ITA investigators mentioned earlier in this report.

The Gilmore Oral Reading Test grade level scores are very high; here we see a reasonably normal population getting scores in the upper fifth and middle sixth grade (DMS 5.5, TO 5.9, ITA 6.5) while their grade level scores on the Stnaford tend to be about 3.8 which is roughly where the population is placed. We also suspect all norms are incorrect.

It is possible that the Stanford scores are a little bit low. At the end of our first grade results the Stanford tended to score the children about 1.7 even though some of the classrooms were in upper middle class districts in part of an experimental project that was carefully supervised which would lead us to think that on national norms they should have been scoring perhaps 2.3. At the end of third grade the Stanford tests frequently gave scores of 3.7 or some mid-third grade scores, but this is probably still within half a year of where they should be by any stretch of rationalization. However, no stretch of rationalization could say that the Gilmore scores have the proper grade norms. Part of these high Gilmore scores may be due to our method of scoring in which hesitations were not counted as errors and part of it may be due to incorrect norms, but in any event, the reader should not interpret Gilmore grade level scores as

representative of grade level but rather use them for their relative differences.

At the end of second grade, the difference between TO Gilmore scores of 4.45 and ITA Gilmore grade level scores of 4.53 were very slight. This year seems to note more of a spread; but the difference is not significant, which means that the standard deviation of these scores is quite large. The tendency for ITA taught children to read somewhat slower was also noted at the end of first grade and second grade. However, this difference is not significant.

In the writing sample, this is the first time that the ITA children have not written significantly longer stories. At the end of first grade when we commented that ITA children were writing longer stories, we also mentioned that writing was not a controlled factor in this study and that the ITA children were given much heavier emphasis on story writing with a sort of "language experience approach" tied in with their reading teaching methods. In third grade, as near as we know, all children were given traditional writing instructions or at least the groups were certainly not differentiated into language experience emphasis, etc., and hence, the test results are tending to show this lack of differentiation of instruction. As we have stated earlier, to make any positive statements

Table 5
Comparison of 1966-67 2nd Grades with 1965-66 2nd Grades
Oral Reading Tests
Mean Scores of a Sub-Sample of the Population

| | DMS (65-66) | TO | ITA | DMS (66-67) |
|---|---|---|---|---|
| Gilmore Accuracy | 4.32 | 4.45 | 4.53 | 4.98 |
| Gilmore Rate | 84.00 | 85.77 | 79.15 | 90.44 |

Table 6
Mean Scores of a Sub-Sample of the 2nd Grade
Population After Instruction on A Writing Sample

| Group | DMS N=34 | TO N=39 | ITA N=30 | DMS (4) N=37 |
|---|---|---|---|---|
| Number of Running Words | 39.06 | 51.85 | 69.83 | 54.30** |
| Number of Different Words | 24.85 | 31.13 | 38.03 | 31.68** |
| Number of Words Spelled Right | 33.26 | 44.82 | 60.53 | 48.35** |
| Number of Polysyllabic Words | 9.41 | 9.47 | 15.50 | 11.92** |
| Mechanics Ratio | 56.46 | 58.49 | 66.45 | 49.87* |

* Significant at p=.05
** Significant at p=.01

about the effect of ITA or DMS or other new alphabets on writing instruction, it would be necessary to have an experiment which controlled the types of writing instruction given to both experimental and control groups.

End of 2nd Grade Mean Scores

The new DMS group while not having significant differences, did tend to maintain a lead in most sub-tests over the old DMS group. Though differences were usually not significant, the old DMS group tended to have slightly lower sub-test scores on most sub-tests than TO or ITA. Part of this was explained by the teacher ratings for the first grade teachers, but part of it could have been in the materials which were used. The old DMS group simple had a traditional set of readers to which DMS marks were applied,and this type of material with complete lack of control over phoneme grapheme regularity was perhaps not the best suited to application of DMS marks. However, the new DMS scores tended to be better in many of the sub-tests than the old DMS group, we would like to think because of the greater suitability of the types of material to the application of DMS marks.

Our new materials used mostly phonetically regular words in the first primer with the absence of complicated vowels and consonants sounds. We then gradually introduced more complex phoneme grapheme correspondences together with more of the

diacritical marks in the second and third primers. Though we certainly have not proved that the new DMS is in any way superior to the traditional basal reader approach, it is at least encouraging to see that we did a little better on our second effort than we did on our first.

Correlation Analysis

Understanding all the correlations is almost a separate study in and of itself. We felt that one of the more interesting parts of our second grade results were some of the trends pointed out by correlations. Let us therefore at this time take a look at the third grade results to see how these trends hold up. Last year it may be recalled we looked at the correlations between the Stanford paragraph meaning sub-test and a number of other variables. This year we will look at the third results of the Stanford paragraph meaning sub-test and the same variables:

A. The low correlation with chronological age continue to exist (.19).

B. Low correlations with the Murphy-Durrell reading readiness test continued with a slight downward trend. For example, the phoneme sub-test was .21 this year and .28 last year. It is not surprising that a readiness test would lose its predicted validity by the end of third grade especially when it was not very

good in first grade. The same is true of the Thurstone Perception Test(.20 and .05) and the Metropolitan Readiness Test(Total .29). The test on the Metropolitan with the best predictive validity was Numbers which had a correlation of .50.

C. The Detroit Word Recognition Test, which was the only reading test given before reading instruction, still maintained rather good validity of .42 which though not high, at least is as good as the best parts of the reading-readiness tests and IQ tests; and it means that children who could read a bit before entering school continue to be good readers up to the end of third grade. This is in line with findings of the Denver kindergarten reading study.

D. The rating of teacher competence in first grade continued to have a surprisingly high correlation of .21. This is down from last year's .59, but we still see the effect of a good first teacher at the end of third grade.

E. The Pitner-Cunningham IQ also diminished its predictivity a little to .41. Last year it was .47 for the raw score.

F. The Stanford paragraphs continued to correlate amazingly high with first grade Stanford scores; for example,

the correlation with the paragraph meaning, the exact same sub-test was .77. This tends to show us that the good readers at the end of first grade are also the good readers at the end of third grade. This same tendency seen in the correlations with the Stanford sub-tests at the end of second grade, but as might be expected, the correlation is even higher with the paragraph meaning sub-test, namely, .85.

G. Reading achievements seem to have little to do with the characteristics measured of the third grade teacher as the paragraphs correlated -.11 with teachers' age, and -.26 with the third grade teachers' years of experience. We did not measure or rate teachers' competence in the third grade, as there were some 56 different classrooms and we felt a minimum of three visits necessary to rate teacher on competence. This would have been an impossible task on the budget which we are operating.

H. Just as we found a low correlation between second grade achievement and class size, we found also a low and insignificant correlation (.11) between size of class in third grade and paragraph reading scores. This continues a trend that we saw even in first grade. The mean class sizes for our project children were not very large, DMS 27.5, TO 25.1, ITA 25.3, nor were the maximum

sizes of 31, 30, and 30. However, there were a few quite small classes, at least one had a class size of 11, and another of 20.

I. Correlation between the Stanford paragraph sub-tests and the Gates-McGinitie given in third grade tend to be high for similar type tests. For example, the highest correlation is .92 with the comprehension section of the Gates-McGinitie, but it drops to .51 for science and social studies concepts, and .64 for arithmetic computation on other parts of the Stanford.

When the new DMS group was added to last year's second grades and a correlation matrix computed, it simply tended to strengthen the existing correlations a little, as might be expected, as we increase the end from 21 to 28 classrooms.

The analysis of variance results for sex and IQ groupings gave the same results for last year on IQ; namely, that brighter children read better by all methods, but no method was particularly better for bright, average or dull students. The result that girls read better than boys in all methods (.05 level) did not show up on our first year or second year results, but it has been found by other investigators.

## CONCLUSIONS

We conclude that special alphabets like the ITA and DMS do not give superior reading achievement to beginning readers when compared to traditional basal readers.

## SUMMARY

Three methods of beginning reading instruction were compared at the end of 1st, 2nd, and 3rd grade on the Stanford Achievement Test, the Gilmore Oral Reading Test, and other measures. The three methods were: (1) The Initial Teaching Alphabet (ITA) Mazurkiewicz and Tannyzer materials (2) a traditional set of basal readers (TO) called the Sheldon Readers and (3) a set of the Sheldon Readers marked with the Diacritical Marking System (DMS). At the end of all three grades, there were no differences on the Stanford or Gilmore tests. The ITA group had inferior spelling at the end of 1st grade but not at the end of 2nd or 3rd grade. The ITA group wrote longer stories and could read phonetically regular words in isolation better than the other two groups. Each group contained 7 classrooms in the 1st grade and were located in suburban schools with intelligence scores very near the U. S. norm. Analysis of variance did not indicate any method to give superior reading achievement for bright or dull students, or for girls or boys.

Seven new classrooms were started the second year with a new DMS set of materials. These children were tested on the same measures at the end of their 1st and 2nd grade and compared with the original results. There were no significant differences between the new DMS group and the three preceding groups though

there was a tendency for the new DMS group to do better on some reading measures than the old DMS group.

A large number of correlations were computed at the end of each year. Using the Stanford paragraph sub-test as the criterion of reading achievement, we found the following:

a. There was little correlation with age.

b. There was little correlation with class size.

c. Students who could read before entering or were ahead at the end of 1st grade tended to stay ahead.

d. Having a good teacher in 1st grade was important.

e. Reading readiness tests were not good predictors.

Last, but not least, we found that special alphabets for beginning reading instruction had been tried in earlier centuries and abandon.

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# APPENDIX

## Appendix

### Table 1
### First Grade IQ of 3rd Grade Children Remaining in the Project at the End of 3rd Grade.

| Mean | Standard Deviation | Standard Error of the Mean | Sample Size | Maximum | Minimum | Range |
|---|---|---|---|---|---|---|
| 97.57 | 12.40 | 3.31 | 14 | 119 | 72 | 47 |
| 94.47 | 8.54 | 2.20 | 15 | 108 | 78 | 30 |
| 99.93 | 12.06 | 3.11 | 15 | 123 | 81 | 42 |
| 95.79 | 11.38 | 3.04 | 14 | 107 | 72 | 35 |
| 96.47 | 16.61 | 4.03 | 17 | 120 | 57 | 63 |
| 100.67 | 8.15 | 2.35 | 12 | 115 | 80 | 35 |
| 98.33 | 14.85 | 4.29 | 12 | 129 | 77 | 52 |
| D.M.S. Mean - 97.60 | | | | | | |
| 99.40 | 7.06 | 2.23 | 10 | 112 | 92 | 20 |
| 104.58 | 15.38 | 3.53 | 19 | 123 | 69 | 54 |
| 110.33 | 16.77 | 4.84 | 12 | 144 | 86 | 58 |
| 97.25 | 18.72 | 6.62 | 8 | 120 | 70 | 50 |
| 99.09 | 11.00 | 3.32 | 11 | 116 | 84 | 32 |
| 100.22 | 14.88 | 4.96 | 9 | 122 | 81 | 41 |
| 104.75 | 13.74 | 3.44 | 16 | 126 | 66 | 60 |
| T.O. Mean - 102.23 | | | | | | |
| 104.31 | 8.81 | 2.20 | 16 | 119 | 88 | 31 |
| 93.88 | 13.24 | 3.31 | 16 | 113 | 74 | 39 |
| 97.64 | 8.80 | 2.65 | 11 | 115 | 85 | 30 |
| 93.26 | 20.26 | 4.22 | 23 | 137 | 55 | 82 |
| 101.28 | 11.00 | 2.59 | 18 | 128 | 86 | 42 |
| 101.93 | 12.31 | 3.18 | 15 | 126 | 84 | 42 |
| 103.29 | 10.94 | 4.13 | 7 | 116 | 83 | 33 |
| I.T.A. Mean - 99.37 | | | | | | |

Analysis of variance among group means: not significant

Appendix
Table 2

Comparison of the IQ of the Original 1st Grade Group with the 1st Grade IQ of Children Remaining at the End of 3rd Grade

| Original | | | Remaining | | |
|---|---|---|---|---|---|
| Mean | Standard Deviation | Sample Size | Mean | Standard Deviation | Sample Size |
| 94.9 | 12.6 | 18 | 97.57 | 12.40 | 14 |
| 93.8 | 8.7 | 16 | 94.47 | 8.54 | 15 |
| 100.8 | 11.3 | 18 | 99.93 | 12.06 | 15 |
| 100.0 | 12.9 | 19 | 95.79 | 11.38 | 14 |
| 95.5 | 17.8 | 22 | 96.47 | 16.61 | 17 |
| 103.4 | 10.2 | 21 | 100.67 | 8.15 | 12 |
| 95.7 | 12.9 | 18 | 98.33 | 14.85 | 12 |
| DMS Mean - 97.7 | | | 97.60 | | |
| 97.5 | 10.3 | 13 | 99.40 | 7.06 | 10 |
| 104.4 | 15.2 | 25 | 104.58 | 15.38 | 19 |
| 104.7 | 15.2 | 22 | 110.33 | 16.77 | 12 |
| 100.5 | 18.0 | 15 | 97.25 | 18.72 | 8 |
| 97.7 | 13.5 | 16 | 99.09 | 11.00 | 11 |
| 98.4 | 19.0 | 15 | 100.22 | 14.88 | 9 |
| 105.8 | 13.0 | 19 | 104.75 | 13.74 | 16 |
| TO Mean - 101.3 | | | 102.23 | | |
| 102.3 | 10.0 | 22 | 104.31 | 8.81 | 16 |
| 92.7 | 13.1 | 19 | 93.88 | 13.24 | 16 |
| 100.0 | 18.0 | 14 | 97.64 | 8.80 | 11 |
| 94.2 | 20.3 | 24 | 93.26 | 20.26 | 23 |
| 100.7 | 10.3 | 24 | 101.28 | 11.00 | 18 |
| 100.7 | 11.5 | 20 | 101.93 | 12.31 | 15 |
| 96.8 | 11.6 | 13 | 103.29 | 10.94 | 7 |
| ITA Mean - 98.2 | | | 99.37 | | |

Appendix
Table 3
3rd Grade - December Testing
Gates McGinitie - Level C Form 1
Comprehension - Total Number Correct

| Mean | Standard Deviation | Standard Error of the Mean | Sample Size | Maximum | Minimum | Range |
|---|---|---|---|---|---|---|
| 21.53 | 12.29 | 3.17 | 15 | 42 | 4 | 38 |
| 25.07 | 14.24 | 3.68 | 15 | 45 | 0 | 45 |
| 30.36 | 9.03 | 2.41 | 14 | 42 | 12 | 30 |
| 23.57 | 10.79 | 2.88 | 14 | 45 | 11 | 34 |
| 21.44 | 8.60 | 2.15 | 16 | 39 | 9 | 30 |
| 27.42 | 10.38 | 3.00 | 12 | 42 | 10 | 32 |
| 19.18 | 7.91 | 2.38 | 11 | 34 | 4 | 30 |
| D.M.S. Mean - 24.08 | | | | | | |
| 31.33 | 6.78 | 2.26 | 9 | 42 | 20 | 22 |
| 30.42 | 10.06 | 2.31 | 19 | 46 | 14 | 32 |
| 31.00 | 10.37 | 2.99 | 12 | 45 | 12 | 33 |
| 23.00 | 12.66 | 3.66 | 12 | 43 | 7 | 36 |
| 19.30 | 8.55 | 2.70 | 10 | 31 | 5 | 26 |
| 29.78 | 8.30 | 2.77 | 9 | 38 | 16 | 22 |
| 31.81 | 8.43 | 2.11 | 16 | 41 | 9 | 32 |
| T.O. Mean - 28.09 | | | | | | |
| 31.93 | 7.54 | 2.02 | 14 | 41 | 18 | 23 |
| 32.20 | 8.78 | 2.27 | 15 | 43 | 10 | 33 |
| 23.79 | 11.24 | 3.00 | 14 | 40 | 9 | 31 |
| 29.04 | 9.49 | 2.02 | 22 | 43 | 15 | 28 |
| 30.67 | 8.27 | 1.95 | 18 | 46 | 18 | 28 |
| 31.00 | 11.61 | 3.10 | 14 | 46 | 8 | 38 |
| 14.86 | 7.18 | 2.71 | 7 | 27 | 4 | 23 |
| I.T.A. Mean - 27.64 | | | | | | |

Analysis of variance among group means: not significant

Appendix
Table 4
3rd Grade - December Testing
Gates McGinitie - Level C Form 1
Vocabulary - Total Number Correct

| Mean | Standard Deviation | Standard Error of the Mean | Sample Size | Maximum | Minimum | Range |
|---|---|---|---|---|---|---|
| 24.87 | 10.93 | 2.82 | 15 | 44 | 12 | 32 |
| 29.60 | 9.56 | 2.47 | 15 | 41 | 14 | 27 |
| 32.00 | 6.97 | 1.86 | 14 | 42 | 18 | 24 |
| 29.21 | 9.22 | 2.47 | 14 | 47 | 18 | 29 |
| 31.81 | 8.23 | 2.06 | 16 | 43 | 16 | 27 |
| 33.08 | 11.46 | 3.31 | 12 | 47 | 13 | 34 |
| 26.18 | 7.68 | 2.32 | 11 | 41 | 19 | 22 |
| D.M.S. Mean - 29.54 | | | | | | |
| 33.56 | 6.62 | 2.20 | 9 | 44 | 23 | 21 |
| 31.84 | 10.86 | 2.49 | 19 | 48 | 12 | 36 |
| 32.42 | 9.75 | 2.81 | 12 | 46 | 22 | 24 |
| 29.00 | 11.11 | 3.21 | 12 | 47 | 10 | 37 |
| 28.10 | 7.98 | 2.52 | 10 | 36 | 11 | 25 |
| 35.44 | 8.17 | 2.72 | 9 | 43 | 18 | 25 |
| 36.94 | 8.16 | 2.04 | 16 | 47 | 22 | 25 |
| T.O. Mean - 32.47 | | | | | | |
| 37.71 | 6.51 | 1.74 | 14 | 45 | 26 | 19 |
| 35.80 | 6.57 | 1.70 | 15 | 45 | 18 | 27 |
| 30.71 | 9.47 | 2.53 | 14 | 47 | 14 | 33 |
| 34.36 | 8.40 | 1.79 | 22 | 47 | 16 | 31 |
| 37.39 | 6.57 | 1.55 | 18 | 46 | 22 | 24 |
| 35.07 | 9.86 | 2.63 | 14 | 51 | 22 | 29 |
| 28.71 | 12.46 | 4.71 | 7 | 41 | 6 | 35 |
| I.T.A. Mean - 34.25 | | | | | | |

Analysis of variance among group means: significant @p = .05
Least significant difference between means = 3.34

Appendix
Table 5

Comparison of Mean Raw Scores on the Stanford Achievement Test Primary II Given at the End of 2nd and 3rd Grade
N= 21 classes

| | DMS | | TO | | ITA | |
|---|---|---|---|---|---|---|
| | End 2nd | End 3rd | End 2nd | End 3rd | End 2nd | End 3rd |
| Word Meaning | 17.4 | 25.43 | 20.3 | 26.01 | 20.4 | 25.78 |
| Par. Meaning | 27.2 | 39.63 | 33.3 | 43.56 | 31.1 | 41.66 |
| Sci.&Soc.St. Concepts | 18.9 | 24.06 | 19.5 | 24.47 | 19.7 | 23.22 |
| Spelling | 13.0 | 20.49 | 14.4 | 21.44 | 15.7 | 21.75 |
| Word Study Skills | 36.8 | 42.83 | 39.8 | 45.36 | 42.3 | 47.49 |
| Language | 35.9 | 45.61 | 39.1 | 48.59 | 36.8 | 48.44 |
| Arith. Comp. | 19.1 | 31.77 | 21.2 | 32.18 | 19.2 | 32.00 |
| Arith. Con. | 15.8 | 25.95 | 18.3 | 29.22 | 16.5 | 27.86 |

Appendix
Table 6

Comparison of Mean Grade Scores on the Stanford Achievement Test Primary II Given at the End of 2nd and 3rd Grade

| | DMS | | TO | | ITA | |
|---|---|---|---|---|---|---|
| | End 2nd | End 3rd | End 2nd | End 3rd | End 2nd | End 3rd |
| Word Meaning | 2.7 | 3.7 | 3.0 | 3.8 | 3.0 | 3.8 |
| Par. Meaning | 2.6 | 3.4 | 3.0 | 3.8 | 2.9 | 3.6 |
| Sc.&Soc.St.Concepts | 2.9 | 4.0 | 3.1 | 4.0 | 3.1 | 3.8 |
| Spelling | 3.0 | 3.7 | 3.1 | 3.8 | 3.3 | 3.9 |
| Word Study Skills | 2.9 | 3.6 | 3.3 | 3.9 | 3.5 | 4.2 |
| Language | 2.9 | 3.6 | 3.1 | 3.9 | 3.0 | 3.8 |
| Arith. Comp. | 2.7 | 3.5 | 2.8 | 3.5 | 2.7 | 3.5 |
| Arith. Con. | 2.6 | 3.4 | 2.8 | 4.0 | 2.7 | 3.8 |

Appendix
Table 7
3rd Grade - May Testing
Stanford Achievement Test - Primary II Form X
Word Meaning - Total Number Correct

| Mean | Standard Deviation | Standard Error of the Mean | Sample Size | Maximum | Minimum | Range |
|---|---|---|---|---|---|---|
| 29.27 | 16.61 | 4.29 | 15 | 64 | 7 | 57 |
| 26.33 | 5.72 | 1.48 | 15 | 34 | 15 | 19 |
| 25.20 | 5.43 | 1.40 | 15 | 33 | 14 | 19 |
| 26.07 | 6.22 | 1.66 | 14 | 33 | 13 | 20 |
| 24.12 | 5.86 | 1.42 | 17 | 33 | 9 | 24 |
| 24.25 | 8.27 | 2.39 | 12 | 31 | 7 | 24 |
| 22.75 | 6.28 | 1.81 | 12 | 30 | 10 | 20 |
| D.M.S. Mean - 25.43 | | | | | | |
| 26.60 | 5.15 | 1.63 | 10 | 34 | 18 | 16 |
| 25.47 | 6.69 | 1.53 | 19 | 35 | 9 | 26 |
| 27.75 | 5.10 | 1.47 | 12 | 34 | 19 | 15 |
| 24.17 | 7.87 | 2.27 | 12 | 32 | 7 | 25 |
| 24.00 | 7.10 | 2.14 | 11 | 33 | 12 | 21 |
| 26.00 | 7.23 | 2.41 | 9 | 32 | 8 | 24 |
| 28.06 | 5.23 | 1.31 | 16 | 35 | 17 | 18 |
| T.O. Mean - 26.01 | | | | | | |
| 28.25 | 6.76 | 1.69 | 16 | 34 | 6 | 28 |
| 27.62 | 3.74 | 0.94 | 16 | 32 | 17 | 15 |
| 22.36 | 6.69 | 1.79 | 14 | 31 | 9 | 22 |
| 25.50 | 5.62 | 1.15 | 24 | 31 | 12 | 19 |
| 26.89 | 5.20 | 1.23 | 18 | 35 | 18 | 17 |
| 27.53 | 5.96 | 1.54 | 15 | 35 | 17 | 18 |
| 22.29 | 8.04 | 3.04 | 7 | 33 | 9 | 24 |
| I.T.A. Mean - 25.78 | | | | | | |

Analysis of variance among group means: not significant

Appendix
Table 8
3rd Grade - May Testing
Stanford Achievement Test - Primary II Form X
Paragraph Meaning - Total Number Correct

| Mean | Standard Deviation | Standard Error of the Mean | Sample Size | Maximum | Minimum | Range |
|---|---|---|---|---|---|---|
| 36.73 | 19.27 | 4.98 | 15 | 75 | 9 | 66 |
| 43.20 | 11.30 | 2.92 | 15 | 55 | 15 | 40 |
| 42.07 | 9.54 | 2.46 | 15 | 55 | 18 | 37 |
| 42.14 | 9.65 | 2.58 | 14 | 56 | 24 | 32 |
| 37.71 | 12.82 | 3.11 | 17 | 56 | 12 | 44 |
| 41.00 | 13.84 | 4.00 | 12 | 58 | 14 | 44 |
| 34.58 | 13.07 | 3.77 | 12 | 52 | 6 | 46 |
| D.M.S. Mean - 39.63 | | | | | | |
| 47.50 | 3.06 | 0.97 | 10 | 51 | 41 | 10 |
| 45.47 | 9.96 | 2.28 | 19 | 59 | 20 | 39 |
| 45.08 | 9.90 | 2.86 | 12 | 56 | 20 | 36 |
| 40.67 | 13.48 | 3.89 | 12 | 57 | 17 | 40 |
| 36.27 | 15.43 | 4.65 | 11 | 53 | 8 | 45 |
| 42.11 | 13.67 | 4.56 | 9 | 52 | 8 | 44 |
| 47.81 | 7.22 | 1.81 | 16 | 58 | 28 | 30 |
| T.O. Mean - 43.56 | | | | | | |
| 45.19 | 10.49 | 2.62 | 16 | 56 | 14 | 42 |
| 44.00 | 9.84 | 2.46 | 16 | 55 | 20 | 35 |
| 39.86 | 11.73 | 3.14 | 14 | 54 | 18 | 36 |
| 44.46 | 11.09 | 2.26 | 24 | 57 | 16 | 41 |
| 43.39 | 9.48 | 2.24 | 18 | 55 | 23 | 32 |
| 43.73 | 11.70 | 3.02 | 15 | 59 | 19 | 40 |
| 31.00 | 12.74 | 4.82 | 7 | 49 | 15 | 34 |
| I.T.A. Mean - 41.66 | | | | | | |

Analysis of variance among group means: not significant

Appendix
Table 9
3rd Grade - May Testing
Stanford Achievement Test - Primary II Form X
Science and Social Study Concepts - Total Number Correct

| Mean | Standard Deviation | Standard Error of the Mean | Sample Size | Maximum | Minimum | Range |
|---|---|---|---|---|---|---|
| 28.47 | 15.47 | 4.00 | 15 | 58 | 13 | 45 |
| 22.47 | 5.89 | 1.52 | 15 | 30 | 13 | 17 |
| 22.53 | 5.63 | 1.45 | 15 | 30 | 13 | 17 |
| 24.36 | 7.46 | 1.99 | 14 | 33 | 8 | 25 |
| 21.82 | 6.08 | 1.47 | 17 | 32 | 10 | 22 |
| 25.42 | 5.09 | 1.47 | 12 | 32 | 14 | 18 |
| 23.33 | 4.85 | 1.40 | 12 | 29 | 15 | 14 |
| D.M.S. Mean - 24.06 | | | | | | |
| 25.30 | 4.27 | 1.35 | 10 | 32 | 19 | 13 |
| 25.37 | 5.97 | 1.37 | 19 | 34 | 13 | 21 |
| 25.17 | 5.47 | 1.58 | 12 | 33 | 16 | 17 |
| 23.08 | 7.06 | 2.04 | 12 | 33 | 13 | 20 |
| 19.91 | 6.92 | 2.09 | 11 | 37 | 10 | 27 |
| 24.00 | 5.79 | 1.93 | 9 | 29 | 12 | 17 |
| 28.44 | 4.38 | 1.10 | 16 | 35 | 20 | 15 |
| T.O. Mean - 24.47 | | | | | | |
| 24.94 | 5.82 | 1.46 | 16 | 32 | 11 | 21 |
| 24.75 | 4.86 | 1.22 | 16 | 31 | 15 | 16 |
| 18.64 | 5.24 | 1.40 | 14 | 27 | 6 | 21 |
| 22.75 | 6.58 | 1.34 | 24 | 32 | 7 | 25 |
| 24.17 | 4.85 | 1.14 | 18 | 32 | 15 | 17 |
| 27.00 | 4.81 | 1.24 | 15 | 35 | 16 | 19 |
| 20.29 | 5.12 | 1.94 | 7 | 29 | 12 | 17 |
| I.T.A. - 23.22 | | | | | | |

Analysis of variance among group means: not significant

Appendix
Table 10
3rd Grade - May Testing
Stanford Achievement Test - Primary II Form X
Spelling - Total Number Correct

| Mean | Standard Deviation | Standard Error of the Mean | Sample Size | Maximum | Minimum | Range |
|---|---|---|---|---|---|---|
| 25.53 | 13.20 | 3.41 | 15 | 48 | 3 | 45 |
| 22.87 | 7.20 | 1.86 | 15 | 29 | 8 | 21 |
| 23.13 | 5.89 | 1.52 | 15 | 30 | 5 | 25 |
| 19.86 | 8.55 | 2.28 | 14 | 29 | 3 | 26 |
| 18.65 | 6.70 | 1.62 | 17 | 28 | 1 | 27 |
| 18.75 | 7.90 | 2.28 | 12 | 29 | 7 | 22 |
| 14.67 | 7.06 | 2.04 | 12 | 27 | 5 | 22 |
| D.M.S. Mean - 20.49 | | | | | | |
| 24.20 | 4.87 | 1.54 | 10 | 29 | 12 | 17 |
| 21.32 | 7.17 | 1.65 | 19 | 29 | 4 | 25 |
| 21.92 | 7.90 | 2.28 | 12 | 29 | 7 | 22 |
| 19.67 | 9.80 | 2.83 | 12 | 30 | 4 | 26 |
| 19.36 | 8.38 | 2.53 | 11 | 29 | 2 | 27 |
| 21.67 | 7.94 | 2.65 | 9 | 30 | 4 | 26 |
| 21.94 | 6.36 | 1.59 | 16 | 30 | 7 | 23 |
| T.O. Mean - 21.44 | | | | | | |
| 24.62 | 5.46 | 1.37 | 16 | 30 | 10 | 20 |
| 25.25 | 4.99 | 1.25 | 16 | 30 | 11 | 19 |
| 23.29 | 8.27 | 2.21 | 14 | 40 | 9 | 31 |
| 21.96 | 6.86 | 1.40 | 24 | 30 | 5 | 25 |
| 22.83 | 4.57 | 1.08 | 18 | 29 | 14 | 15 |
| 21.60 | 6.66 | 1.72 | 15 | 29 | 11 | 18 |
| 12.71 | 8.58 | 3.24 | 7 | 24 | 3 | 21 |
| I.T.A. Mean - 21.75 | | | | | | |

Analysis of Variance among group means: not significant

## Appendix
## Table 11
### 3rd Grade - May Testing
### Stanford Achievement Test - Primary II Form X
### Word Study Skills - Total Number Correct

| Mean | Standard Deviation | Standard Error of the Mean | Sample Size | Maximum | Minimum | Range |
|---|---|---|---|---|---|---|
| 42.80 | 17.06 | 4.40 | 15 | 74 | 22 | 52 |
| 44.87 | 12.44 | 3.21 | 15 | 62 | 21 | 41 |
| 46.80 | 13.15 | 3.40 | 15 | 70 | 18 | 52 |
| 43.29 | 14.38 | 3.84 | 14 | 64 | 21 | 43 |
| 42.00 | 10.75 | 2.61 | 17 | 60 | 24 | 36 |
| 42.75 | 14.23 | 4.11 | 12 | 62 | 19 | 43 |
| 37.33 | 11.68 | 3.37 | 12 | 52 | 17 | 35 |
| D.M.S. Mean - 42.83 | | | | | | |
| 47.50 | 10.43 | 3.30 | 10 | 62 | 31 | 31 |
| 48.00 | 12.96 | 2.97 | 19 | 62 | 20 | 42 |
| 46.67 | 11.84 | 3.42 | 12 | 59 | 25 | 34 |
| 46.33 | 14.22 | 4.10 | 12 | 62 | 24 | 38 |
| 36.73 | 15.37 | 4.63 | 11 | 58 | 20 | 38 |
| 44.33 | 10.80 | 3.60 | 9 | 56 | 23 | 33 |
| 47.94 | 10.69 | 2.67 | 16 | 63 | 20 | 43 |
| T.O. Mean - 45.36 | | | | | | |
| 49.50 | 7.83 | 1.96 | 16 | 60 | 33 | 27 |
| 49.56 | 7.95 | 1.99 | 16 | 58 | 35 | 23 |
| 50.21 | 10.43 | 2.79 | 14 | 63 | 32 | 31 |
| 46.12 | 13.13 | 2.68 | 24 | 64 | 17 | 47 |
| 48.94 | 11.33 | 2.67 | 18 | 63 | 27 | 36 |
| 49.80 | 11.92 | 3.08 | 15 | 63 | 29 | 34 |
| 23.14 | 5.46 | 2.06 | 7 | 30 | 14 | 16 |
| I.T.A. Mean - 47.49 | | | | | | |

Analysis of variance among group means: not significant

Appendix
Table 12
3rd Grade - May Testing
Stanford Achievement Test - Primar
Language - Total Number Correct

| Mean | Standard Deviation | Standard Error of the Mean | Sample Size | Maximum |
|---|---|---|---|---|
| 42.20 | 14.81 | 3.82 | 15 | 74 |
| 50.40 | 11.94 | 3.08 | 15 | 68 |
| 51.33 | 7.21 | 1.86 | 15 | 62 |
| 47.36 | 10.48 | 2.80 | 14 | 67 |
| 41.18 | 9.02 | 2.19 | 17 | 56 |
| 44.83 | 11.88 | 3.43 | 12 | 59 |
| 42.00 | 10.50 | 3.03 | 12 | 61 |
| D.M.S. Mean - 45.61 | | | | |
| 45.60 | 5.06 | 1.60 | 10 | 51 |
| 53.16 | 8.98 | 2.06 | 19 | 65 |
| 52.42 | 10.13 | 2.92 | 12 | 62 |
| 48.33 | 16.41 | 4.74 | 12 | 69 |
| 41.18 | 11.62 | 3.50 | 11 | 58 |
| 48.00 | 10.66 | 3.56 | 9 | 61 |
| 51.44 | 9.16 | 2.29 | 16 | 67 |
| T.O. Mean - 48.59 | | | | |
| 53.06 | 8.92 | 2.23 | 16 | 65 |
| 52.00 | 8.88 | 2.22 | 16 | 66 |
| 46.71 | 11.82 | 3.16 | 14 | 64 |
| 46.21 | 13.76 | 2.81 | 24 | 67 |
| 51.44 | 9.12 | 2.15 | 18 | 65 |
| 47.40 | 10.99 | 2.84 | 15 | 69 |
| 42.29 | 9.36 | 3.54 | 7 | 55 |

Appendix
Table 13
3rd Grade - May Testing
Stanford Achievement Test - Prim
Arithmetic Computation - Tot

| Mean | Standard Deviation | Standard Error of the Mean | Sample Size | Maximum |
|---|---|---|---|---|
| 35.13 | 16.00 | 4.13 | 15 | 58 |
| 38.33 | 8.02 | 2.07 | 15 | 50 |
| 31.87 | 5.94 | 1.53 | 15 | 40 |
| 28.79 | 7.94 | 2.12 | 14 | 37 |
| 25.88 | 10.07 | 2.44 | 17 | 41 |
| 34.58 | 16.04 | 4.63 | 12 | 59 |
| 27.83 | 10.48 | 3.02 | 12 | 49 |
| D.M.S. Mean - 31.77 | | | | |
| 30.90 | 8.81 | 2.79 | 10 | 45 |
| 34.16 | 10.34 | 2.37 | 19 | 52 |
| 32.83 | 6.55 | 1.89 | 12 | 43 |
| 31.08 | 5.26 | 1.52 | 12 | 38 |
| 25.00 | 13.46 | 4.06 | 11 | 56 |
| 31.89 | 17.02 | 5.67 | 9 | 55 |
| 39.38 | 12.86 | 3.22 | 16 | 58 |
| T.O. Mean - 32.18 | | | | |
| 31.12 | 7.55 | 1.89 | 16 | 45 |
| 32.12 | 6.73 | 1.68 | 16 | 52 |
| 33.14 | 3.76 | 1.00 | 14 | 39 |
| 35.29 | 14.90 | 3.04 | 24 | 60 |
| 35.33 | 6.06 | 1.43 | 18 | 50 |
| 31.87 | 11.97 | 3.09 | 15 | 52 |
| 25.14 | 9.12 | 3.45 | 7 | 34 |
| I.T.A. Mean - 32.00 | | | | |

ect

ange

51
31
19
24
39
56
37

25
47
19
16
44
54
38

33
26
15
49
24
42
22

## Appendix
## Table 14
### 3rd Grade - May Testi
### Stanford Achievement Test -
### Arithmetic Concepts - Tota

| Mean | Standard Deviation | Standard Error of the Mean | Sample Size | M |
|---|---|---|---|---|
| 30.47 | 17.38 | 4.49 | 15 | 6 |
| 30.73 | 10.19 | 2.63 | 15 | 4 |
| 25.47 | 8.97 | 2.32 | 15 | 4 |
| 25.29 | 9.31 | 2.49 | 14 | 3 |
| 19.12 | 7.97 | 1.93 | 17 | 3 |
| 28.08 | 10.34 | 2.99 | 12 | 4 |
| 22.50 | 8.78 | 2.53 | 12 | 3 |
| D.M.S. Mean - 25.95 | | | | |
| 30.60 | 7.79 | 2.46 | 10 | 4 |
| 31.05 | 9.55 | 2.19 | 19 | 4 |
| 32.92 | 7.55 | 2.18 | 12 | 4 |
| 26.08 | 11.63 | 3.36 | 12 | 4 |
| 21.91 | 11.42 | 3.44 | 11 | 4 |
| 28.67 | 11.99 | 4.00 | 9 | 4 |
| 33.31 | 9.58 | 2.40 | 16 | 4 |
| T.O. Mean - 29.22 | | | | |
| 29.19 | 8.60 | 2.15 | 16 | |
| 28.12 | 10.58 | 2.65 | 16 | |
| 29.14 | 7.87 | 2.10 | 14 | |
| 27.17 | 9.82 | 2.00 | 24 | |
| 29.33 | 7.63 | 1.80 | 18 | |
| 28.93 | 9.54 | 2.46 | 15 | |
| 23.14 | 5.46 | 2.06 | 7 | |

n X

| Range |
|---|
| 52 |
| 29 |
| 28 |
| 26 |
| 27 |
| 31 |
| 25 |
| |
| 24 |
| 32 |
| 20 |
| 31 |
| 32 |
| 36 |
| 30 |
| |
| 30 |
| 48 |
| 25 |
| 34 |
| 26 |
| 31 |
| 16 |

Appendix
Table 15

Stanford Primary II Form W W
Mean Total Raw S

7 D.M.S. 2nd Grades,

| Mean | Standard Deviation | Standard Error of the Mean | Sampl Size |
|---|---|---|---|
| 17.41 | 8.54 | 1.82 | 22 |
| 23.38 | 6.31 | 1.38 | 21 |
| 19.80 | 6.91 | 1.78 | 15 |
| 22.17 | 5.66 | 1.33 | 18 |
| 19.10 | 8.71 | 2.00 | 19 |
| 19.82 | 6.01 | 1.28 | 22 |
| 18.00 | 6.38 | 2.02 | 10 |

Mean - 19.95

Appendix
Table 16

Stanford Primary II Form W Par
7 D.M.S. 2nd Grades,

| | | | |
|---|---|---|---|
| 27.23 | 13.03 | 2.78 | 22 |
| 39.76 | 11.39 | 2.49 | 21 |
| 33.40 | 11.48 | 2.96 | 15 |
| 35.94 | 9.35 | 2.20 | 18 |
| 32.21 | 12.50 | 2.87 | 19 |
| 32.54 | 11.25 | 2.40 | 22 |
| 32.30 | 13.68 | 4.33 | 10 |

Mean - 33.34

Appendi
Table 1

Stanford Primary II Form W Science
7 D.M.S. 2nd Grades,

| | | | |
|---|---|---|---|
| 18.86 | 5.74 | 1.22 | 22 |
| 23.95 | 4.38 | 0.96 | 21 |
| 21.33 | 3.56 | 0.92 | 15 |
| 18.94 | 5.48 | 1.29 | 18 |
| 17.47 | 5.92 | 1.36 | 19 |
| 21.91 | 4.07 | 0.87 | 22 |

| nimum | Range |
|---|---|
| | 31 |
| | 20 |
| | 22 |
| | 18 |
| | 30 |
| | 19 |
| | 17 |

est

| | |
|---|---|
| | 49 |
| | 43 |
| | 41 |
| | 37 |
| | 45 |
| | 41 |
| | 37 |

lies Concepts

| | |
|---|---|
| 6 | 23 |
| 6 | 15 |
| 6 | 12 |
| 2 | 19 |
| 9 | 22 |
| 2 | 16 |

Appen
Table
Stanford Primary

7 D.M.S. 2nd Grad

| Mean | Standard Deviation | Standard Error of the Mean | Sa Si |
|---|---|---|---|
| 12.82 | 7.43 | 1.58 | 22 |
| 17.71 | 7.30 | 1.59 | 21 |
| 15.67 | 8.53 | 2.20 | 15 |
| 14.50 | 6.24 | 1.47 | 18 |
| 15.10 | 9.18 | 2.10 | 19 |
| 17.36 | 7.77 | 1.66 | 22 |
| 15.70 | 6.90 | 2.21 | 10 |

Mean - 15.55

Appen
Table
Stanford Primary II Form
7 D.M.S. 2nd Grad

| | | | |
|---|---|---|---|
| 36.00 | 13.75 | 2.93 | 22 |
| 43.00 | 8.68 | 1.89 | 21 |
| 41.73 | 13.90 | 3.59 | 15 |
| 39.56 | 9.79 | 2.31 | 18 |
| 41.90 | 13.46 | 3.09 | 19 |
| 40.14 | 12.18 | 2.60 | 22 |
| 42.30 | 11.65 | 3.68 | 10 |

Mean - 40.66

Appen
Table
Stanford Primary II For
7 D.M.S. 2nd Grad

| | | | |
|---|---|---|---|
| 34.32 | 11.49 | 2.45 | 2 |
| 44.33 | 8.14 | 1.78 | 2 |
| 39.53 | 10.48 | 2.71 | 1 |
| 40.44 | 9.73 | 2.29 | 1 |
| 36.68 | 9.48 | 2.17 | 1 |
| 40.91 | 7.91 | 1.69 | 2 |

ng

| Minimum | Range |
|---|---|
| 0 | 25 |
| 5 | 25 |
| 4 | 25 |
| 5 | 19 |
| 2 | 27 |
| 4 | 26 |
| 7 | 17 |

ills

| | |
|---|---|
| 17 | 40 |
| 24 | 35 |
| 23 | 37 |
| 22 | 31 |
| 20 | 41 |
| 16 | 42 |
| 25 | 33 |

| | |
|---|---|
| 14 | 43 |
| 25 | 35 |
| 28 | 37 |
| 24 | 35 |
| 25 | 31 |
| 25 | 29 |
| 23 | 28 |

Ap
Ta

Stanford Primary II Form

7 D.M.S. 2nd

| Mean | Standard Deviation | Standard Error of the Mean |
|---|---|---|
| 14.14 | 6.14 | 1.31 |
| 20.38 | 5.88 | 1.28 |
| 15.13 | 7.20 | 1.86 |
| 14.22 | 4.17 | 0.98 |
| 25.58 | 6.08 | 1.39 |
| 23.64 | 7.68 | 1.64 |
| 22.10 | 11.02 | 3.48 |

Mean - 19.31

A
T

Stanford Primary II F

7 D.M.S. 2nd

| | | |
|---|---|---|
| 14.54 | 7.60 | 1.62 |
| 21.62 | 7.82 | 1.71 |
| 17.93 | 9.52 | 2.46 |
| 19.06 | 6.15 | 1.45 |
| 18.74 | 8.24 | 1.89 |
| 23.27 | 6.73 | 1.44 |
| 21.30 | 8.82 | 2.79 |

Mean - 19.49

Computation

7

| mum | Minimum | Range |
|---|---|---|
| | 6 | 21 |
| | 7 | 25 |
| | 5 | 26 |
| | 7 | 15 |
| | 11 | 21 |
| | 6 | 28 |
| | 6 | 28 |

ic Concepts

57

| | | |
|---|---|---|
| | 2 | 25 |
| | 12 | 27 |
| | 7 | 37 |
| | 9 | 21 |
| | 4 | 27 |
| | 13 | 25 |
| | 9 | 27 |

Descriptio

| | M |
|---|---|
| Class Size* | |

* This refers to size
Grade and does not ref

| |
|---|
| Pupil Attendance<br>Total Number of<br>Days Absent |

lasses In Which

| n | Maximum | Minimum | Range |
|---|---|---|---|
| 52 | 31.0 | 11.0 | 20.0 |
| 12 | 30.0 | 11.0 | 19.0 |
| 34 | 30.0 | 20.0 | 10.0 |

ch the child spent 3rd
or test purposes.

| | | | |
|---|---|---|---|
| 33 | 24.0 | 0.0 | 24.0 |
| 19 | 24.0 | 0.0 | 24.0 |
| 64 | 21.0 | 0.0 | 21.0 |

General
Some Proj

| |
|---|
| Age of Teacher in Years |
| Total Number of Years of Teaching Experience of 3rd Grade Teachers |
| Total Number of Y of Third Grade Teaching Experi |
| Number of Childre The Teacher Has (as parent) |
| Teacher Attendanc Total Number of Days Absent |

* All means for
for each teacher
she had from that

<
4
All Teachers Who Had
ildren In Their Classes

| Mean | Maximum | Minimum | Range |
|---|---|---|---|
| 31.23 | 61.0 | 22.0 | 39.0 |
| 27.23 | 51.0 | 22.0 | 29.0 |
| 38.21 | 61.0 | 22.0 | 39.0 |
| 5.24 | 27.0 | 0.0 | 27.0 |
| 1.79 | 14.0 | 0.0 | 14.0 |
| 11.22 | 37.0 | 0.0 | 37.0 |
| 3.04 | 14.0 | 0.0 | 14.0 |
| 1.11 | 7.0 | 0.0 | 7.0 |
| 6.16 | 14.0 | 0.0 | 14.0 |
| .98 | 5.0 | 0.0 | 5.0 |
| .62 | 5.0 | 0.0 | 5.0 |
| 1.02 | 5.0 | 0.0 | 5.0 |
| 4.48 | 15.0 | 0.0 | 15.0 |
| 4.10 | 15.0 | 0.0 | 15.0 |
| 3.46 | 8.0 | 0.0 | 8.0 |

lated by weighing the "Measure"
ng to the number of children

C

| Class Size |
|---|
| * This refe<br>Grade and do |
| Pupil Attend<br>Total Numb<br>Days Absen |

pendix
ble 25
ss Size and Pupil Attendance
2nd Grade With Last Year's

| | Mean | Maximum | Minimum | Range |
|---|---|---|---|---|
| (65) | 26.47 | 28.0 | 17.0 | 11.0 |
| | 25.73 | 29.0 | 17.0 | 12.0 |
| | 25.39 | 29.0 | 22.0 | 7.0 |
| (66) | 26.79 | 31.0 | 22.0 | 9.0 |

ass in which the child spent 2nd
grouping for test purposes.

| | | | | |
|---|---|---|---|---|
| (65) | 5.35 | 36.0 | 0.0 | 36.0 |
| | 6.60 | 27.0 | 0.0 | 27.0 |
| | 6.86 | 36.0 | 0.0 | 36.0 |
| (66) | 6.04 | 30.0 | 0.0 | 30.0 |

Appendix
Table 27

Correlations Between Paragraph Meaning Sub-test of the Stanford Achievement Battery, Primary II - Form X at th End of 3rd Grade and All Other Measures Used in the 1st 2nd, and 3rd Grades of the Original 21 Classes Using Cl Means

| | | |
|---|---|---|
| 1. | Chronological Age | |
| 2. | Murphy-Durrell Reading Readiness Phonemes | 9 |
| 3. | Murphy-Durrell Letter Names | 9 |
| 4. | Murphy-Durrell Learning Rate | 9 |
| 5. | Thurstone Primary Perception Test - Pattern Copying | 9 |
| 6. | Thurstone Primary Perception Test - Identical Forms | 9 |
| 7. | Metropolitan Readiness Test - Word Meaning | 9 |
| 8. | Metropolitan Readiness Test - Listening | 9 |
| 9. | Metropolitan Readiness Test - Matching | 9 |
| 10. | Metropolitan Readiness Test - Numbers | 9 |
| 11. | Metropolitan Readiness Test - Copying | 9 |
| 12. | Metropolitan Readiness Test - Alphabet | 9 |
| 13. | Metropolitan Readiness Test - Total | 9 |
| 14. | Detroit Word Recognition Test | 12 |
| 15. | Rating, Overall Competence 1st Grade Teacher | |
| 16. | Pintner-Cunningham Raw Score | 10 |
| 17. | Pintner-Cunningham IQ | 10 |
| 18. | Pupil Attendance 1st Grade | |
| 19. | Stanford Primary I - Word Reading | |
| 20. | Stanford Primary I - Paragraph Meaning | |
| 21. | Stanford Primary I - Vocabulary | |
| 22. | Stanford Primary I - Spelling | |
| 23. | Stanford Primary I - Word Study Skills | |
| 24. | Instant Word Test | 1 |
| 25. | Detroit Word Recognition Test | |
| 26. | Age of 2nd Grade Teacher | |
| 27. | Total No. of Years Teaching Experience-2nd Gr. Teach | |
| 28. | 2nd Grade Teaching Experience | |
| 29. | Class Size 2nd Grade | |
| 30. | Pupil Attendance 2nd Grade | |
| 31. | Teacher Attendance 2nd Grade | |
| 32. | Stanford Primary II Word Meaning | |
| 33. | Stanford Primary II Paragraph Meaning | |

Appendix
Table 27 Cont.

36. Stanford Primary II Word Study Skills
37. Stanford Primary II Language
38. Stanford Primary II Arithmetic Computation
39. Stanford Primary II Arithmetic Concepts
40. Books Read Completely 4wks. 2/7/66 3/7/66
41. Books Read Partially 4wks. 2/7/66 3/7/66
42. Eagerness to Read
43. Maturity of Choice
44. Rating, Overall Competence 2nd Grade Teacher
45. Instructional Time - Reading
46. Instructional Time - Supportive Activities
47. Instructional Time - Total
48. Stanford Primary I Word Reading
49. Stanford Primary I Paragraph Meaning
50. Stanford Primary I Vocabulary
51. Stanford Primary I Spelling
52. Stanford Primary I Word Study Skills
53. 1st Grade IQ
54. Age of 3rd Grade Teacher
55. Total Teaching Experience of 3rd Grade Teacher
56. 3rd Grade Teaching Experience
57. Number of Children Teacher Has As Parent
58. Class Size 3rd Grade
59. Pupil Attendance 3rd Grade
60. Teacher Attendance
61. Gates McGinitie-Level C-Form 1-Vocabulary
62. Gates McGinitie-Level C-Form 1-Comprehension
63. Stanford Primary II Word Meaning
65. Stanford Primary II Sci. and Soc. Study Concepts
66. Stanford Primary II Spelling
67. Stanford Primary II Word Study Skills
68. Stanford Primary II Language
69. Stanford Primary II Arithmetic Computation

Appendix
Table 28
Correlation Matrix
Grade 3 Variables 66-67

| | | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1. | First Grade IQ* | | -.07 | -.11 | -.23 | -. |
| 2. | Age of Teacher | -.07 | | .88 | .87 | . |
| 3. | Total Yrs. Teach. Exp. | -.11 | .88 | | .90 | . |
| 4. | Exp. in 3rd Grades | -.23 | .87 | .90 | | . |
| 5. | No. Children Teach. Has | -.07 | .38 | .12 | .30 | |
| 6. | Class Size | -.19 | .24 | -.11 | -.06 | -. |
| 7. | Pupil Attend. | -.21 | -.22 | -.15 | -.10 | -. |
| 8. | Teach. Attend. | .03 | -.58 | -.42 | -.33 | . |
| 9. | Gates McGinitie(Voc.) | .27 | .27 | .15 | .22 | -. |
| 10. | Gates McGinitie(Comp.) | .28 | -.01 | -.18 | -.06 | -. |
| 11. | Stanford II Word Mean. | .21 | -.16 | -.25 | -.20 | -. |
| 12. | Par. Mean. | .19 | -.11 | -.26 | -.14 | -. |
| 13. | Sci. and Soc. St. Con. | .30 | -.35 | -.42 | -.43 | -. |
| 14. | Spell | -.09 | -.14 | -.22 | .02 | . |
| 15. | Word St. Skills | .14 | .07 | -.02 | .18 | . |
| 16. | Language | .35 | .21 | -.02 | .05 | . |
| 17. | Arith. Comp. | .05 | .03 | -.15 | .02 | . |
| 18. | Arith. Con. | .40 | -.15 | -.21 | -.10 | . |

* Of 3rd Grade Children Remaining in the Project. only test not given in 3rd grade.

Appendix
Table 28 Cont.
Correlation Matrix
Grade 3 Variables 66-67

| | | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|
| 1. | First Grade IQ* | .27 | .28 | .21 | .1 |
| 2. | Age of Teacher | .27 | -.01 | -.16 | -.1 |
| 3. | Total Yrs. Teach. Exp. | .15 | -.18 | -.25 | -.2 |
| 4. | Exp. in 3rd Grades | .22 | -.06 | -.20 | -.1 |
| 5. | No. Children Teach. Has | -.16 | -.15 | -.29 | -.1 |
| 6. | Class Size | .01 | .14 | .47 | .1 |
| 7. | Pupil Attend. | -.08 | .12 | .25 | .2 |
| 8. | Teach. Attend. | -.38 | -.12 | .08 | -.0 |
| 9. | Gates McGinitie(Voc.) | | .82 | .43 | .7 |
| 10. | Gates McGinitie(Comp.) | .82 | | .65 | .9 |
| 11. | Stanford II Word Mean. | .43 | .65 | | .6 |
| 12. | Par. Mean. | .72 | .92 | .63 | |
| 13. | Sci. and Soc. St. Con. | .29 | .54 | .80 | .5 |
| 14. | Spell. | .42 | .70 | .73 | .6 |
| 15. | Word St. Skills | .69 | .82 | .51 | .8 |
| 16. | Language | .62 | .79 | .51 | .7 |
| 17. | Arith. Comp. | .37 | .60 | .54 | .6 |
| 18. | Arith. Con. | .41 | .68 | .66 | .7 |

* Of 3rd Grade Children Remaining in the Proje

| | 16 |
|---|---|
| | .35 |
| | .21 |
| | -.02 |
| | .05 |
| | .06 |
| | .24 |
| | .28 |
| | -.29 |
| | .62 |
| | .79 |
| | .51 |
| | .77 |
| | .32 |
| | .55 |
| | .77 |
| | |
| | .58 |
| | .67 |

Appendix
Table 28 Cont.
Correlation Matrix
Grade 3 Variables 66-67

| | | 17 | 18 |
|---|---|---|---|
| 1. | First Grade IQ* | .05 | .40 |
| 2. | Age of Teacher | .03 | -.15 |
| 3. | Total Yrs. Teach. Exp. | -.15 | -.21 |
| 4. | Exp. in 3rd Grades | .02 | -.10 |
| 5. | No. Children Teach. Has | .23 | .10 |
| 6. | Class Size | .39 | .10 |
| 7. | Pupil Attend. | -.06 | -.02 |
| 8. | Teach. Attend. | .26 | .32 |
| 9. | Gates McGinitie(Voc.) | .37 | .41 |
| 10. | Gates McGinitie(Comp.) | .60 | .68 |
| 11. | Stanford II Word Mean. | .54 | .66 |
| 12. | Par. Mean. | .64 | .72 |
| 13. | Sci. and Soc. St. Con. | .52 | .60 |
| 14. | Spell. | .59 | .64 |
| 15. | Word St. Skills | .60 | .68 |
| 16. | Language | .58 | .67 |
| 17. | Arith. Comp. | | .82 |
| 18. | Arith. Con. | .82 | |

* Of 3rd Grade Children Remaining in the

Appendix
Table 29
Correlation Matrix of 70 Variables
Years of the DMS, TO, ITA Reading Me

| | | 1 | 2 |
|---|---|---|---|
| 1. | C. Age | 9/64 | . |
| 2. | M.-D. Phonemes | 9/64 | .47 |
| 3. | M.-D. Letter Names | 9/64 | .31 . |
| 4. | M.-D. Learn. Rate | 9/64 | .48 . |
| 5. | Thurs. Pattern CP | 9/64 | -.44-. |
| 6. | Thurs. Ident. Form | 9/64 | .39 . |
| 7. | Met. Word Mean. | 9/64 | .38 . |
| 8. | Met. Listening | 9/64 | .42 . |
| 9. | Met. Matching | 9/64 | .18 . |
| 10. | Met. Numbers | 9/64 | .39 . |
| 11. | Met. Copying | 9/64 | .45 . |
| 12. | Met. Alphabet | 9/64 | .32 . |
| 13. | Met. Total | 9/64 | .42 |
| 14. | Detroit Word Rec. | 12/64 | -.10 |
| 15. | Teacher Rating | 1st gr | .22 |
| 16. | P.-C. Raw Score | 10/64 | .43 |
| 17. | P.-C. IQ | 10/64 | .16 |
| 18. | Pupil Attend. | 1st gr | -.23- |
| 19. | Stan. Word Read. | 5/65 | .30 |
| 20. | Stan. Par. Mean. | 5/65 | .33 |
| 21. | Stan. Voc. | 5/65 | .50 |
| 22. | Stan Spell. | 5/65 | .33 |
| 23. | Stan. Word St. | 5/65 | .44 |
| 24. | Instant Words | 12/64 | .51 |
| 25. | Detroit Word Rec. | 5/65 | .28 |
| 26. | Age Teach. 2nd Grade | | -.36- |
| 27. | Teaching Exp. | | -.33- |
| 28. | 2nd Grade Exp. | | -.05- |
| 29. | Class Size | 2nd gr | -.22 |
| 30. | Pupil Attend. | 2nd gr | .24 |
| 31. | Teacher Attend. | 2nd gr | -.04 |
| 32. | Stan. Word Mean. | 5/66 | .10 |
| | | 5/66 | .17 |

tion

| 6 | 7 |
|---|---|
| .39 | .38 |
| .65 | .72 |
| .29 | .52 |
| .30 | .27 |
| -.45 | -.42 |
| | .59 |
| .59 | |
| .18 | .65 |
| .16 | .28 |
| .22 | .47 |
| .09 | .35 |
| .30 | .55 |
| .30 | .66 |
| .13 | -.16 |
| .26 | .41 |
| .46 | .36 |
| .38 | .30 |
| -.08 | -.23 |
| .28 | .43 |
| .24 | .24 |
| .44 | .56 |
| .15 | .28 |
| .39 | .38 |
| .32 | .45 |
| .34 | .41 |
| .02 | .18 |
| -.11 | -.00 |
| -.08 | -.17 |
| -.03 | .25 |
| .37 | .11 |
| -.09 | .10 |
| .02 | .25 |
| -.01 | .15 |

App
Table
Correlation Matrix of 70 Va
Years of the DMS, TO, ITA Rea

| | | |
|---|---|---|
| 36. | Stan. Word St. | 5/66 |
| 37. | Stan. Language | 5/66 |
| 38. | Stan. Arith. Comp. | 5/66 |
| 39. | Stan. Arith. Con. | 5/66 |
| 40. | Books Read Comp. | 2nd gr |
| 41. | Books Read Part. | 2nd gr |
| 42. | Eagerness Read | 2nd gr |
| 43. | Maturity Choice | 2nd gr |
| 44. | Teacher Rating | 2nd gr |
| 45. | Ins. Time Read. | 2nd gr |
| 46. | Ins. Time Supp. | 2nd gr |
| 47. | Ins. Time Total | 2nd gr |
| 48. | Stan. Word Read | 12/65 |
| 49. | Stan. Par. Mean. | 12/65 |
| 50. | Stan. Voc. | 12/65 |
| 51. | Stan. Spell. | 12/65 |
| 52. | Stan. Word St. | 12/65 |
| 53. | 1st Grade IQ* | |
| 54. | Teacher Age | 3rd gr |
| 55. | Total Teach. Exp. | 3rd gr |
| 56. | Exp. 3rd Grade | 3rd gr |
| 57. | No. of Children | 3rd gr |
| 58. | Class Size | 3rd gr |
| 59. | Pupil Attend. | 3rd gr |
| 60. | Teach. Attend. | 3rd gr |
| 61. | Gates McGin.(Voc.) | 12/66 |
| 62. | Gates McGin.(Comp.) | 12/66 |
| 63. | Stan. Word Mean. | 5/67 |
| 64. | Stan. Par. Mean. | 5/67 |
| 65. | Stan. Sci. & Soc. St. | 5/67 |
| 66. | Stan. Spell. | 5/67 |
| 67. | Stan. Word St. Skills | 5/67 |

Three
estigation

| 4 | 5 | 6 | 7 |
|---|---|---|---|
| .09 | .07 | .12 | .04 |
| .35 | -.00 | .40 | .40 |
| .35 | .27 | .32 | .03 |
| .40 | -.05 | .39 | .30 |
| .06 | -.25 | -.00 | .21 |
| .03 | .20 | -.42 | -.22 |
| .20 | -.25 | -.02 | .16 |
| .17 | -.27 | -.03 | .20 |
| .07 | -.06 | .27 | .53 |
| .15 | .24 | -.09 | -.14 |
| .23 | -.26 | -.26 | -.33 |
| .29 | .01 | -.26 | -.36 |
| .29 | .07 | .10 | .35 |
| .40 | .19 | .18 | .49 |
| .32 | .03 | .38 | .62 |
| .32 | .27 | .01 | .17 |
| .27 | .16 | .07 | .27 |
| .30 | .12 | .40 | .26 |
| .27 | .08 | -.12 | .01 |
| .18 | .16 | -.24 | -.11 |
| .23 | .19 | -.23 | -.23 |
| .48 | .16 | .07 | -.40 |
| .12 | -.06 | -.25 | .08 |
| .17 | .41 | -.52 | -.36 |
| .11 | .08 | .05 | -.35 |
| .22 | -.16 | .11 | .38 |
| .25 | .04 | .10 | .32 |
| .06 | -.02 | -.11 | .22 |
| .29 | .20 | .05 | .24 |
| .17 | -.15 | .29 | .55 |
| .00 | .23 | -.36 | -.25 |
| .08 | .20 | -.03 | -.03 |

App
Tab
Cor

| | 8 | 9 | 10 | 11 | |
|---|---|---|---|---|---|
| 1. | .42 | .18 | .39 | .45 | |
| 2. | .55 | .53 | .53 | .52 | |
| 3. | .41 | .39 | .51 | .62 | |
| 4. | .41 | .39 | .44 | .27 | |
| 5. | -.06 | .20 | .03 | .00 | - |
| 6. | .18 | .16 | .22 | .09 | |
| 7. | .65 | .28 | .47 | .35 | |
| 8. | | .53 | .71 | .37 | |
| 9. | .53 | | .63 | .49 | |
| 10. | .71 | .63 | | .76 | |
| 11. | .37 | .49 | .76 | | |
| 12. | .44 | .44 | .58 | .66 | |
| 13. | .71 | .72 | .85 | .80 | |
| 14. | .17 | -.01 | .29 | -.04 | - |
| 15. | .31 | .21 | .48 | .36 | |
| 16. | .53 | .62 | .65 | .44 | |
| 17. | .47 | .65 | .59 | .35 | |
| 18. | -.06 | .03 | -.20 | -.21 | - |
| 19. | .45 | .27 | .37 | .18 | |
| 20. | .52 | .47 | .59 | .31 | |
| 21. | .62 | .45 | .68 | .44 | |
| 22. | .58 | .43 | .59 | .33 | |
| 23. | .50 | .32 | .44 | .18 | |
| 24. | .44 | .30 | .52 | .41 | |
| 25. | .61 | .57 | .71 | .39 | |
| 26. | .15 | .09 | .16 | .00 | |
| 27. | -.05 | -.20 | -.02 | -.05 | - |
| 28. | -.01 | -.14 | .06 | .00 | |
| 29. | .25 | .23 | .33 | .08 | |
| 30. | -.07 | -.14 | -.11 | .00 | - |
| 31. | .23 | .09 | .27 | .06 | |
| 32. | .36 | .28 | .51 | .41 | |
| 33. | .41 | .27 | .52 | .38 | |

| | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|
| | .22 | .43 | .16 | -.23 | .30 |
| | .35 | .60 | .53 | -.14 | .53 |
| | .33 | .36 | .33 | -.09 | .09 |
| | .08 | .60 | .51 | -.03 | .35 |
| | .28 | .10 | .27 | .14 | -.03 |
| | .26 | .46 | .38 | -.08 | .28 |
| | .41 | .36 | .30 | -.23 | .43 |
| | .31 | .53 | .47 | -.06 | .45 |
| | .21 | .62 | .65 | .03 | .27 |
| | .48 | .65 | .59 | -.20 | .37 |
| | .36 | .44 | .35 | -.21 | .18 |
| | .33 | .42 | .38 | -.02 | .15 |
| | .41 | .61 | .56 | -.10 | .32 |
| | .03 | .26 | .35 | .00 | .25 |
| | | .36 | .35 | -.51 | .63 |
| | .36 | | .94 | .06 | .47 |
| | .35 | .94 | | .07 | .45 |
| | -.51 | .06 | .07 | | -.38 |
| | .63 | .47 | .45 | -.38 | |
| | .48 | .59 | .57 | -.22 | .81 |
| | .59 | .81 | .75 | -.39 | .80 |
| | .50 | .53 | .52 | -.12 | .64 |
| | .49 | .60 | .49 | -.26 | .78 |
| | .70 | .55 | .45 | -.44 | .74 |
| | .52 | .65 | .62 | -.16 | .67 |
| | .31 | .11 | .22 | -.12 | .24 |
| | .17 | -.05 | -.00 | -.06 | .11 |
| | .11 | -.15 | -.19 | -.02 | .16 |
| | .14 | .10 | .25 | -.16 | .04 |
| | .22 | .00 | -.08 | -.01 | .33 |
| | -.28 | -.02 | -.04 | .26 | -.33 |
| | .70 | .45 | .46 | -.37 | .75 |
| | .59 | .47 | .49 | -.41 | .76 |

| | 8 | 9 | 10 | 11 |
|---|---|---|---|---|
| 36. | .13 | .07 | .20 | .0 |
| 37. | .44 | .27 | .60 | .4 |
| 38. | .24 | .10 | .23 | -. |
| 39. | .45 | .23 | .64 | . |
| 40. | -.24 | -.30 | -.12 | .0 |
| 41. | -.18 | -.26 | -.28 | -. |
| 42. | -.07 | -.48 | -.06 | .0 |
| 43. | -.07 | -.34 | .14 | . |
| 44. | .28 | -.08 | .13 | . |
| 45. | -.03 | -.13 | .06 | -. |
| 46. | -.25 | -.32 | -.20 | -.0 |
| 47. | -.21 | -.34 | -.10 | -. |
| 48. | .31 | .18 | .30 | . |
| 49. | .54 | .35 | .58 | .4 |
| 50. | .57 | .47 | .53 | . |
| 51. | .53 | .25 | .40 | .0 |
| 52. | .37 | .26 | .47 | . |
| 53. | .24 | .51 | .36 | . |
| 54. | -.36 | -.01 | -.27 | .0 |
| 55. | -.47 | -.17 | -.43 | -.0 |
| 56. | -.51 | -.06 | -.37 | -. |
| 57. | -.44 | .03 | -.18 | -. |
| 58. | .17 | -.00 | .24 | . |
| 59. | .05 | -.15 | .02 | -. |
| 60. | -.03 | -.02 | .04 | -. |
| 61. | .33 | .25 | .39 | . |
| 62. | .43 | .26 | .47 | . |
| 63. | .34 | .01 | .42 | . |
| 64. | .46 | .22 | .50 | . |
| 65. | .47 | .11 | .58 | . |
| 66. | .09 | -.00 | .21 | -. |
| 67. | .06 | .08 | .14 | . |
| 68. | .28 | .24 | .30 | . |

| 4 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|
| 34 | .60 | .36 | .36 | -.32 | .77 |
| 42 | .55 | .56 | .53 | -.33 | .58 |
| 58 | -.02 | .50 | .50 | .04 | .50 |
| 47 | .40 | .66 | .57 | -.09 | .55 |
| 12 | .01 | -.47 | -.51 | -.47 | .16 |
| 07 | -.17 | -.47 | -.44 | -.07 | .25 |
| 03 | -.03 | -.09 | -.21 | -.46 | .26 |
| 12 | .04 | -.14 | -.28 | -.33 | .09 |
| 04 | .34 | .13 | .16 | -.37 | .62 |
| 30 | -.42 | -.08 | -.04 | .20 | -.26 |
| 13 | -.06 | -.55 | -.63 | -.49 | -.23 |
| 15 | -.40 | -.46 | -.49 | -.19 | -.38 |
| 07 | .47 | .36 | .33 | -.38 | .87 |
| 30 | .45 | .53 | .54 | -.33 | .83 |
| 08 | .42 | .58 | .57 | -.29 | .75 |
| 47 | .17 | .44 | .46 | -.01 | .68 |
| 25 | .43 | .46 | .41 | -.34 | .85 |
| 18 | .31 | .68 | .79 | .18 | .16 |
| 41 | .08 | -.24 | -.21 | -.31 | .04 |
| 51 | -.21 | -.31 | -.30 | -.15 | -.16 |
| 46 | -.19 | -.28 | -.29 | -.19 | -.04 |
| 18 | -.04 | -.12 | -.14 | .05 | -.20 |
| 15 | .10 | -.19 | -.16 | -.35 | -.07 |
| 45 | -.08 | -.00 | .05 | .23 | .13 |
| 30 | -.33 | .09 | .07 | .17 | -.32 |
| 06 | .62 | .41 | .36 | -.40 | .76 |
| 32 | .54 | .40 | .41 | -.33 | .83 |
| 23 | .32 | .14 | .14 | -.26 | .31 |
| 42 | .51 | .41 | .42 | -.41 | .82 |
| 18 | .38 | .37 | .32 | -.26 | .33 |
| 32 | .10 | .00 | .03 | -.17 | .36 |
| 20 | .28 | .34 | .35 | -.22 | .71 |
| 31 | .32 | .38 | .48 | -.10 | .66 |
| 32 | .11 | .28 | .25 | -.40 | .36 |
| 41 | .10 | .39 | .44 | -.15 | .38 |

| | 20 | 21 |
|---|---|---|
| 1. | .33 | .50 |
| 2. | .48 | .69 |
| 3. | .21 | .40 |
| 4. | .60 | .57 |
| 5. | .16 | .00 |
| 6. | .24 | .44 |
| 7. | .24 | .56 |
| 8. | .52 | .62 |
| 9. | .47 | .45 |
| 10. | .59 | .68 |
| 11. | .31 | .44 |
| 12. | .31 | .44 |
| 13. | .48 | .62 |
| 14. | .56 | .32 |
| 15. | .48 | .59 |
| 16. | .59 | .81 |
| 17. | .57 | .75 |
| 18. | -.22 | -.39 |
| 19. | .81 | .80 |
| 20. | | .78 |
| 21. | .78 | |
| 22. | .83 | .62 |
| 23. | .80 | .77 |
| 24. | .73 | .77 |
| 25. | .88 | .75 |
| 26. | .17 | .15 |
| 27. | .02 | -.02 |
| 28. | .33 | -.02 |
| 29. | .07 | .19 |
| 30. | .06 | .06 |
| 31. | -.16 | -.18 |
| 32. | .67 | .72 |
| 33. | .77 | .74 |
| 34. | .16 | .63 |

| 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|
| .28 | -.36 | -.33 | -.05 | -.22 | .24 | -.04 |
| .51 | -.09 | -.32 | -.27 | .14 | .25 | -.27 |
| .37 | -.05 | -.28 | -.16 | .24 | -.20 | -.09 |
| .52 | -.07 | -.11 | .08 | -.04 | -.28 | -.15 |
| .15 | .18 | .18 | .12 | .27 | -.36 | .16 |
| .34 | .02 | -.11 | -.08 | -.03 | .37 | -.09 |
| .41 | .18 | -.00 | -.17 | .25 | .11 | .10 |
| .61 | .15 | -.05 | -.01 | .25 | -.07 | .23 |
| .57 | .09 | -.20 | -.14 | .23 | -.14 | .09 |
| .71 | .16 | -.02 | .06 | .33 | -.11 | .27 |
| .39 | .00 | -.05 | .00 | .08 | .00 | .06 |
| .47 | .12 | -.06 | .05 | .14 | -.20 | .01 |
| .65 | .14 | -.10 | -.04 | .27 | -.14 | .15 |
| .35 | .03 | -.04 | .16 | .31 | -.15 | -.07 |
| .52 | .31 | .17 | .11 | .14 | .22 | -.28 |
| .65 | .11 | -.05 | -.15 | .10 | .00 | -.02 |
| .62 | .22 | -.00 | -.19 | .25 | -.08 | -.04 |
| -.16 | -.12 | -.06 | -.02 | -.16 | -.01 | .26 |
| .67 | .24 | .11 | .16 | .04 | .33 | -.33 |
| .88 | .17 | .02 | .33 | .07 | .06 | -.16 |
| .75 | .15 | -.02 | -.02 | .19 | .06 | -.18 |
| .78 | .15 | -.02 | .18 | .24 | -.14 | .05 |
| .78 | .36 | .23 | .30 | .06 | .02 | -.08 |
| .72 | -.00 | -.15 | -.02 | .12 | .02 | -.36 |
|  | .30 | .13 | .40 | .04 | .03 | .05 |
| .30 |  | .90 | .55 | .10 | -.02 | .35 |
| .13 | .90 |  | .68 | -.18 | .07 | .34 |
| .40 | .55 | .68 |  | -.48 | .27 | .28 |
| .04 | .10 | -.18 | -.48 |  | -.61 | .18 |
| .03 | -.02 | .07 | .27 | -.61 |  | -.18 |
| .05 | .35 | .34 | .28 | .18 | -.18 |  |
| .67 | .38 | .26 | .28 | .08 | .01 | -.18 |
| .70 | .27 | .18 | .26 | .09 | -.10 | -.18 |
| .34 | .30 | .17 | -.26 | .34 | -.16 | .09 |
| .43 | .24 | .19 | .18 | .19 | -.16 | -.18 |

| | 20 |
|---|---|
| 36. | .66 |
| 37. | .63 |
| 38. | .61 |
| 39. | .68 |
| 40. | -.05 |
| 41. | .24 |
| 42. | -.05 |
| 43. | -.06 |
| 44. | .26 |
| 45. | -.17 |
| 46. | -.27 |
| 47. | -.34 |
| 48. | .65 |
| 49. | .76 |
| 50. | .62 |
| 51. | .68 |
| 52. | .73 |
| 53. | .28 |
| 54. | -.19 |
| 55. | -.34 |
| 56. | -.23 |
| 57. | -.17 |
| 58. | -.10 |
| 59. | .24 |
| 60. | -.07 |
| 61. | .52 |
| 62. | .72 |
| 63. | .26 |
| 64. | .77 |
| 65. | .30 |
| 66. | .32 |
| 67. | .51 |
| 68. | .51 |
| 69. | .38 |

endix
le 29
t.

| 4 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|
| 68 | .51 | .12 | .01 | .12 | .10 | .16 | -.48 |
| 76 | .63 | -.08 | -.25 | -.13 | .32 | -.14 | -.18 |
| 22 | .54 | .10 | .08 | .28 | -.07 | .17 | .18 |
| 60 | .71 | -.05 | -.12 | .13 | .02 | .12 | -.04 |
| 05 | -.16 | .01 | .10 | .05 | .05 | .01 | -.27 |
| 22 | .05 | .22 | .34 | .72 | -.35 | .06 | .06 |
| 11 | -.15 | .03 | .27 | .09 | -.28 | .04 | -.16 |
| 12 | -.00 | .01 | .25 | .14 | -.18 | -.08 | -.03 |
| 23 | .23 | .42 | .44 | .14 | .03 | .25 | -.05 |
| 52 | -.25 | .11 | .14 | .05 | .25 | .17 | .60 |
| 13 | -.35 | -.39 | -.21 | -.02 | -.28 | .06 | -.16 |
| 53 | -.47 | -.20 | -.04 | .03 | .00 | .18 | .38 |
| 61 | .57 | .33 | .28 | .24 | -.02 | .12 | -.20 |
| 65 | .73 | .34 | .22 | .17 | .16 | -.01 | .00 |
| 58 | .68 | .16 | .04 | -.04 | .10 | .22 | .05 |
| 33 | .58 | .23 | .15 | .22 | .10 | .03 | .24 |
| 66 | .58 | .13 | .10 | .08 | .06 | .17 | -.16 |
| 21 | .41 | .48 | .20 | -.06 | .30 | -.17 | .13 |
| 17 | -.22 | .00 | -.08 | -.38 | .37 | -.37 | -.27 |
| 05 | -.30 | .14 | .24 | -.29 | .04 | -.39 | -.16 |
| 04 | -.28 | .08 | .16 | -.24 | -.02 | -.19 | -.21 |
| 05 | -.14 | -.28 | -.31 | -.16 | .00 | .15 | .18 |
| 00 | -.25 | -.13 | -.26 | -.50 | .76 | -.49 | .17 |
| 02 | .08 | -.01 | .12 | .15 | .15 | -.32 | -.08 |
| 47 | -.04 | -.09 | .01 | .26 | -.21 | .15 | .31 |
| 60 | .44 | .44 | .31 | .14 | .03 | .08 | -.18 |
| 48 | .56 | .48 | .32 | .27 | .21 | .12 | .06 |
| 14 | .19 | .51 | .37 | .19 | .39 | -.08 | .42 |
| 56 | .65 | .43 | .32 | .34 | .16 | .06 | .09 |
| 24 | .34 | .36 | .24 | .14 | .29 | .22 | .45 |
| 06 | .10 | .34 | .34 | .33 | .13 | .04 | .28 |
| 33 | .30 | .27 | .22 | .16 | -.00 | .24 | -.06 |
| 40 | .38 | .30 | .09 | -.13 | .50 | -.18 | .07 |
| 23 | .31 | .03 | -.07 | -.04 | .35 | -.05 | .34 |

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Appendix
Table 29
Cont.

| | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 36. | .81 | .77 | .33 | .76 | | .64 | .44 | .64 | -.00 | .13 | - |
| 37. | .68 | .76 | .61 | .47 | .64 | | .45 | .80 | -.16 | -.33 | - |
| 38. | .38 | .50 | .23 | .44 | .44 | .45 | | .68 | -.29 | .21 | |
| 39. | .68 | .70 | .54 | .48 | .64 | .80 | .68 | | -.18 | -.13 | |
| 40. | -.02 | -.09 | -.15 | .06 | -.00 | -.16 | -.29 | -.18 | | .36 | |
| 41. | .18 | .20 | -.55 | .27 | .13 | -.33 | .21 | -.13 | .36 | | |
| 42. | .12 | .20 | .24 | .16 | -.00 | -.02 | .06 | .09 | .60 | .18 | |
| 43. | .14 | .11 | .21 | .19 | -.09 | -.01 | -.12 | .14 | .72 | .11 | |
| 44. | .46 | .44 | .40 | .36 | .28 | .31 | .29 | .22 | .38 | .19 | |
| 45. | -.36 | -.34 | -.14 | -.13 | -.32 | -.34 | .29 | -.08 | -.13 | .17 | - |
| 46. | -.18 | -.04 | -.28 | -.05 | -.16 | -.07 | -.26 | -.21 | .30 | .03 | |
| 47. | -.43 | -.32 | -.32 | -.15 | -.39 | -.34 | .05 | -.22 | .24 | .15 | |
| 48. | .83 | .79 | .37 | .75 | .70 | .53 | .47 | .53 | .30 | .38 | |
| 49. | .80 | .84 | .48 | .63 | .57 | .68 | .56 | .64 | .13 | .21 | |
| 50. | .51 | .53 | .47 | .39 | .35 | .49 | .52 | .52 | .08 | -.05 | |
| 51. | .57 | .70 | .25 | .69 | .45 | .48 | .79 | .58 | -.23 | .30 | |
| 52. | .71 | .75 | .31 | .72 | .65 | .54 | .49 | .58 | .25 | .13 | |
| 53. | .30 | .24 | .53 | -.01 | .20 | .31 | .25 | .29 | -.54 | -.40 | - |
| 54. | .13 | .01 | .07 | .13 | .22 | .06 | -.38 | -.28 | .44 | -.01 | |
| 55. | -.00 | -.12 | -.03 | -.03 | -.01 | -.23 | -.36 | -.38 | .45 | .25 | |
| 56. | .05 | -.07 | -.15 | .13 | .11 | -.23 | -.26 | -.32 | .49 | .21 | |
| 57. | -.08 | -.10 | -.16 | -.00 | .12 | .13 | .09 | -.03 | -.25 | -.20 | - |
| 58. | -.07 | -.02 | .14 | .16 | -.07 | .12 | -.26 | -.13 | .26 | -.18 | |
| 59. | .08 | .20 | -.10 | .56 | .16 | -.08 | .15 | .06 | .02 | .20 | |
| 60. | -.19 | -.15 | -.13 | -.11 | -.17 | -.18 | .43 | .20 | -.41 | .05 | - |
| 61. | .84 | .74 | .49 | .61 | .65 | .50 | .21 | .44 | .15 | .12 | |
| 62. | .78 | .76 | .35 | .71 | .66 | .50 | .54 | .54 | .06 | .35 | |
| 63. | .36 | .32 | .34 | .40 | .20 | .13 | .22 | .22 | .02 | .18 | |
| 64. | .78 | .85 | .36 | .75 | .64 | .58 | .63 | .58 | -.02 | .32 | |
| 65. | .26 | .20 | .46 | .05 | .09 | .23 | .31 | .38 | -.02 | -.02 | |
| 66. | .40 | .42 | -.05 | .66 | .32 | .04 | .41 | .20 | .03 | .45 | |
| 67. | .65 | .63 | .22 | .71 | .68 | .33 | .62 | .44 | -.04 | .32 | |
| 68. | .64 | .65 | .42 | .72 | .59 | .55 | .51 | .42 | -.10 | .16 | - |
| 69. | .41 | .46 | .37 | .42 | .32 | .53 | .61 | .56 | .09 | .04 | |

Appendix
Table 29
Cont.

| | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 |
|---|---|---|---|---|---|---|---|---|---|
| 1. | .12 | .06 | -.14 | .17 | .01 | .20 | .20 | .27 | .13 |
| 2. | .00 | .31 | -.25 | -.32 | -.45 | .38 | .50 | .57 | .16 |
| 3. | -.16 | -.06 | -.41 | -.26 | -.53 | .08 | .26 | .05 | -.11 |
| 4. | .17 | .07 | -.15 | -.23 | -.29 | .29 | .40 | .32 | .32 |
| 5. | -.27 | -.06 | .24 | -.26 | .01 | .07 | .19 | .03 | .27 |
| 6. | -.03 | .27 | -.09 | -.26 | -.26 | .10 | .18 | .38 | .01 |
| 7. | .20 | .53 | -.14 | -.33 | -.36 | .35 | .49 | .62 | .17 |
| 8. | -.07 | .28 | -.03 | -.25 | -.21 | .31 | .54 | .57 | .53 |
| 9. | -.34 | -.08 | -.13 | -.32 | -.34 | .18 | .35 | .47 | .25 |
| 10. | .14 | .13 | .06 | -.20 | -.10 | .30 | .58 | .53 | .40 |
| 11. | .22 | .14 | -.16 | -.02 | -.15 | .24 | .43 | .27 | .06 |
| 12. | -.02 | .04 | -.35 | -.37 | -.56 | .19 | .34 | .11 | -.02 |
| 13. | .00 | .14 | -.21 | -.35 | -.43 | .30 | .53 | .45 | .21 |
| 14. | -.12 | .04 | .30 | -.13 | .15 | .07 | .30 | .08 | .47 |
| 15. | .04 | .34 | -.42 | -.06 | -.40 | .47 | .45 | .42 | .17 |
| 16. | -.14 | .13 | -.08 | -.55 | -.46 | .36 | .53 | .58 | .44 |
| 17. | -.28 | .16 | -.04 | -.63 | -.49 | .33 | .54 | .57 | .46 |
| 18. | -.33 | -.37 | .20 | -.49 | -.19 | -.38 | -.33 | -.29 | -.01 |
| 19. | .09 | .62 | -.26 | -.23 | -.38 | .87 | .83 | .75 | .68 |
| 20. | -.06 | .26 | -.17 | -.27 | -.34 | .65 | .76 | .62 | .68 |
| 21. | .08 | .46 | -.16 | -.32 | -.36 | .71 | .80 | .75 | .58 |
| 22. | -.28 | .19 | -.21 | -.26 | -.37 | .44 | .66 | .53 | .65 |
| 23. | .09 | .39 | -.27 | -.30 | -.45 | .71 | .69 | .60 | .55 |
| 24. | .12 | .23 | -.52 | -.13 | -.53 | .61 | .65 | .58 | .33 |
| 25. | -.00 | .23 | -.25 | -.35 | -.47 | .57 | .73 | .68 | .58 |
| 26. | .01 | .42 | .11 | -.39 | -.20 | .33 | .34 | .16 | .23 |
| 27. | .25 | .44 | .14 | -.21 | -.04 | .28 | .22 | .04 | .15 |
| 28. | .14 | .14 | .05 | -.02 | .03 | .24 | .17 | -.04 | .22 |
| 29. | -.18 | .03 | .25 | -.28 | .00 | -.02 | .16 | .10 | .10 |
| 30. | -.08 | .25 | .17 | .06 | .18 | .12 | -.01 | .22 | .03 |
| 31. | -.03 | -.05 | .60 | -.16 | .38 | -.20 | .00 | .05 | .24 |
| 32. | .14 | .46 | -.36 | -.18 | -.43 | .83 | .80 | .51 | .57 |
| 33. | .11 | .44 | -.34 | -.04 | -.32 | .79 | .84 | .53 | .70 |
| 34. | .21 | .40 | -.14 | -.28 | -.32 | .37 | .48 | .47 | .25 |

Appendix
Table 29
Cont.

| | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 5 |
|---|---|---|---|---|---|---|---|---|---|
| 36. | -.09 | .28 | -.32 | -.16 | -.39 | .70 | .57 | .35 | . |
| 37. | -.01 | .31 | -.34 | -.07 | -.34 | .53 | .68 | .49 | . |
| 38. | -.12 | .29 | .29 | -.26 | .05 | .47 | .56 | .52 | . |
| 39. | .14 | .22 | -.08 | -.21 | -.22 | .53 | .64 | .52 | . |
| 40. | .72 | .38 | -.13 | .30 | .24 | .30 | .13 | .08 | -. |
| 41. | .11 | .19 | .17 | .03 | .15 | .38 | .21 | -.05 | . |
| 42. | .85 | .56 | -.04 | .38 | .46 | .44 | .34 | .23 | . |
| 43. | | .41 | -.14 | .34 | .33 | .37 | .27 | .22 | -. |
| 44. | .41 | | -.10 | -.05 | -.11 | .68 | .68 | .60 | . |
| 45. | -.14 | -.10 | | -.19 | .69 | -.27 | -.15 | -.06 | . |
| 46. | .34 | -.05 | -.19 | | .58 | -.18 | -.27 | -.24 | -. |
| 47. | .33 | -.11 | .69 | .58 | | -.36 | -.32 | -.22 | -. |
| 48. | .37 | .68 | -.27 | -.18 | -.36 | | .88 | .68 | |
| 49. | .27 | .68 | -.15 | -.27 | -.32 | .88 | | .80 | |
| 50. | .22 | .60 | -.06 | -.24 | -.22 | .68 | .80 | | |
| 51. | -.06 | .47 | .18 | -.23 | -.02 | .67 | .78 | .66 | |
| 52. | .40 | .57 | -.09 | -.10 | -.15 | .86 | .86 | .76 | |
| 53. | -.47 | -.03 | -.03 | -.74 | -.57 | .07 | .24 | .19 | |
| 54. | .10 | .07 | -.37 | .04 | -.28 | .23 | .01 | -.08 | - |
| 55. | .40 | .03 | -.32 | -.00 | -.26 | .17 | -.07 | -.21 | - |
| 56. | .31 | .04 | -.20 | .11 | -.09 | .27 | -.03 | -.12 | - |
| 57. | -.37 | -.29 | .00 | .22 | .25 | -.14 | -.27 | -.14 | - |
| 58. | .12 | -.03 | .30 | .27 | .45 | -.12 | -.03 | -.03 | |
| 59. | .24 | -.08 | .18 | -.10 | .07 | .12 | .14 | .04 | |
| 60. | -.13 | -.26 | .55 | .13 | .55 | -.30 | -.29 | -.18 | |
| 61. | .21 | .57 | -.34 | -.16 | -.40 | .85 | .75 | .49 | |
| 62. | .03 | .58 | .08 | -.28 | -.14 | .82 | .82 | .60 | |
| 63. | .10 | .17 | .52 | -.23 | .26 | .32 | .37 | .22 | |
| 64. | .06 | .54 | .06 | -.14 | -.06 | .80 | .86 | .65 | |
| 65. | .10 | .27 | .54 | -.35 | .19 | .23 | .39 | .44 | |
| 66. | .09 | .22 | .52 | .04 | .46 | .45 | .37 | .16 | |
| 67. | -.03 | .41 | .18 | -.21 | -.01 | .77 | .64 | .48 | |
| 68. | -.16 | .44 | .08 | -.44 | -.25 | .70 | .75 | .55 | |
| 69. | .16 | .30 | .40 | .07 | .39 | .48 | .55 | .48 | |
| | | | | | | | | | |

Appendix
Table 29
Cont.

| | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 6 |
|---|---|---|---|---|---|---|---|---|
| 1. | -.16 | -.24 | -.19 | .00 | .00 | -.32 | .02 | . |
| 2. | .05 | -.15 | -.10 | -.21 | -.09 | -.38 | -.24 | . |
| 3. | .12 | .01 | -.17 | -.14 | -.03 | -.46 | -.26 | . |
| 4. | -.27 | -.18 | -.23 | -.48 | -.12 | .17 | .11 | . |
| 5. | .08 | .16 | .19 | .16 | -.06 | .41 | .08 | - |
| 6. | -.12 | -.24 | -.23 | .07 | -.25 | -.52 | .05 | . |
| 7. | .01 | -.11 | -.23 | -.40 | .08 | -.36 | -.35 | . |
| 8. | -.36 | -.47 | -.51 | -.44 | .17 | .05 | -.03 | . |
| 9. | -.01 | -.17 | -.06 | .03 | -.00 | -.15 | -.02 | . |
| 10. | -.27 | -.43 | -.37 | -.18 | .24 | .02 | .04 | . |
| 11. | .01 | -.08 | -.03 | -.07 | .07 | -.25 | -.20 | . |
| 12. | .03 | .02 | -.16 | -.29 | -.14 | -.40 | -.18 | . |
| 13. | -.04 | -.16 | -.21 | -.24 | .05 | -.27 | -.19 | . |
| 14. | -.41 | -.51 | -.46 | -.18 | .15 | .45 | .30 | - |
| 15. | .08 | -.21 | -.19 | -.04 | .10 | -.08 | -.33 | . |
| 16. | -.24 | -.31 | -.28 | -.12 | -.19 | -.00 | .09 | . |
| 17. | -.21 | -.30 | -.29 | -.14 | -.16 | .05 | .07 | . |
| 18. | -.31 | -.15 | -.19 | .05 | -.35 | .23 | .17 | - |
| 19. | .04 | -.16 | -.04 | -.20 | -.07 | .13 | -.32 | . |
| 20. | -.19 | -.34 | -.23 | -.17 | -.10 | .24 | -.07 | . |
| 21. | -.07 | -.23 | -.19 | -.24 | -.02 | -.02 | -.06 | . |
| 22. | -.17 | -.40 | -.41 | -.02 | .07 | .22 | -.28 | . |
| 23. | .07 | -.02 | .04 | -.07 | -.15 | .05 | -.18 | . |
| 24. | .17 | -.05 | -.04 | -.05 | -.00 | .02 | -.47 | . |
| 25. | -.22 | -.30 | -.28 | -.14 | -.25 | .08 | -.04 | . |
| 26. | .00 | .14 | .08 | -.28 | -.13 | -.01 | -.09 | . |
| 27. | -.08 | .24 | .16 | -.31 | -.26 | .12 | .01 | . |
| 28. | -.38 | -.29 | -.24 | -.16 | -.50 | .15 | .26 | . |
| 29. | .37 | .04 | -.02 | .00 | .76 | .15 | -.21 | . |
| 30. | -.37 | -.39 | -.19 | .15 | -.49 | -.32 | .15 | . |
| 31. | -.27 | -.16 | -.21 | .18 | .17 | -.08 | .31 | - |
| 32. | .13 | -.00 | .05 | -.08 | -.07 | .08 | -.19 | |
| 33. | .01 | -.12 | -.07 | -.10 | -.02 | .20 | -.15 | |
| 34. | .07 | -.03 | -.15 | -.16 | .14 | -.10 | -.13 | |
| 35. | .13 | -.03 | .13 | -.00 | .16 | .56 | -.11 | |

Appendix
Table 29
Cont.

| | 54 | 55 | 56 | 57 | 58 | 59 | 6 |
|---|---|---|---|---|---|---|---|
| 36. | .22 | -.01 | .11 | .12 | -.07 | .16 | -. |
| 37. | .06 | -.23 | -.23 | .13 | .12 | -.08 | -. |
| 38. | -.38 | -.36 | -.26 | .09 | -.26 | .15 | . |
| 39. | -.28 | -.38 | -.32 | -.03 | -.13 | .06 | . |
| 40. | .44 | .45 | .49 | -.25 | .26 | .02 | -. |
| 41. | -.01 | .25 | .21 | -.20 | -.18 | .20 | . |
| 42. | .00 | .33 | .22 | -.48 | .06 | .17 | -. |
| 43. | .10 | .40 | .31 | -.37 | .12 | .24 | -. |
| 44. | .07 | .03 | .04 | -.29 | -.03 | -.08 | -. |
| 45. | -.37 | -.32 | -.20 | .00 | .30 | .18 | . |
| 46. | .04 | -.00 | .11 | .22 | .27 | -.10 | . |
| 47. | -.28 | -.26 | -.09 | .25 | .45 | .07 | . |
| 48. | .23 | .17 | .27 | -.14 | -.12 | .12 | -. |
| 49. | .01 | -.07 | -.03 | -.27 | -.03 | .14 | -. |
| 50. | -.08 | -.21 | -.12 | -.14 | -.03 | .04 | -. |
| 51. | -.32 | -.40 | -.30 | -.10 | .03 | .37 | . |
| 52. | .08 | -.06 | .13 | -.08 | .06 | .30 | -. |
| 53. | -.07 | -.11 | -.23 | -.07 | -.19 | -.21 | . |
| 54. | | .88 | .87 | .38 | .24 | -.22 | -. |
| 55. | .88 | | .90 | .12 | -.11 | -.15 | -. |
| 56. | .87 | .90 | | .30 | -.06 | -.10 | -. |
| 57. | .38 | .12 | .30 | | -.03 | -.33 | . |
| 58. | .24 | -.11 | -.06 | -.03 | | .24 | -. |
| 59. | -.22 | -.15 | -.10 | -.33 | .24 | | -. |
| 60. | -.58 | -.42 | -.33 | .08 | -.12 | -.01 | |
| 61. | .27 | .15 | .22 | -.16 | .01 | -.08 | -. |
| 62. | -.01 | -.18 | -.06 | -.15 | .14 | .12 | -. |
| 63. | -.16 | -.25 | -.20 | -.29 | .47 | .25 | . |
| 64. | -.11 | -.26 | -.14 | -.10 | .11 | .24 | -. |
| 65. | -.35 | -.42 | -.43 | -.31 | .27 | -.05 | . |
| 66. | -.14 | -.22 | .02 | .00 | .33 | .41 | . |
| 67. | .07 | -.02 | .18 | .11 | -.03 | .20 | -. |
| 68. | .21 | -.02 | .05 | .06 | .24 | .28 | -. |
| 69. | .03 | -.15 | .02 | .23 | .39 | -.06 | . |

| | 64 |
|---|---|
| 0 | .64 |
| 3 | .58 |
| 2 | .63 |
| 2 | .58 |
| 2 | -.02 |
| 8 | .32 |
| 7 | .23 |
| 0 | .06 |
| 7 | .54 |
| 2 | .06 |
| 3 | -.14 |
| 6 | -.06 |
| 2 | .80 |
| 7 | .86 |
| 2 | .65 |
| 6 | .86 |
| 1 | .80 |
| 1 | .19 |
| 6 | -.11 |
| 5 | -.26 |
| 0 | -.14 |
| 9 | -.10 |
| 7 | .11 |
| 5 | .24 |
| 8 | -.08 |
| 3 | .72 |
| 5 | .92 |
| | .63 |
| 3 | |
| 0 | .51 |
| 3 | .69 |
| 1 | .80 |
| 1 | .77 |
| 4 | .64 |

Appendix
Table 29
Cont.

| | 65 | 66 | 67 | 68 | 69 | 70 |
|---|---|---|---|---|---|---|
| 1. | .30 | -.06 | .09 | -.10 | .25 | .0 |
| 2. | .27 | -.26 | .12 | .22 | .22 | .1 |
| 3. | .16 | -.40 | -.20 | .06 | .04 | .0 |
| 4. | .17 | .00 | .08 | .11 | .13 | .1 |
| 5. | -.15 | .23 | .20 | .31 | .10 | .2 |
| 6. | .29 | -.36 | -.03 | -.00 | .19 | .1 |
| 7. | .55 | -.25 | -.03 | .22 | .19 | .1 |
| 8. | .47 | .09 | .06 | .28 | .24 | .2 |
| 9. | .11 | -.00 | .08 | .24 | .18 | .2 |
| 10. | .58 | .21 | .14 | .30 | .48 | .4 |
| 11. | .28 | -.01 | .02 | .07 | .24 | .1 |
| 12. | .24 | -.28 | -.15 | .07 | .03 | .1 |
| 13. | .40 | -.12 | -.02 | .22 | .24 | .2 |
| 14. | .18 | .32 | .20 | .31 | .32 | .4 |
| 15. | .38 | .10 | .28 | .32 | .11 | .1 |
| 16. | .37 | .00 | .34 | .38 | .28 | .3 |
| 17. | .32 | .03 | .35 | .48 | .25 | .4 |
| 18. | -.26 | -.17 | -.22 | -.10 | -.40 | -. |
| 19. | .33 | .36 | .71 | .66 | .36 | . |
| 20. | .30 | .32 | .51 | .51 | .38 | . |
| 21. | .51 | .18 | .54 | .55 | .51 | . |
| 22. | .30 | .19 | .32 | .55 | .26 | . |
| 23. | .28 | .19 | .48 | .46 | .33 | . |
| 24. | .24 | -.06 | .33 | .40 | .23 | . |
| 25. | .34 | .10 | .30 | .38 | .31 | . |
| 26. | .36 | .34 | .27 | .30 | .03 | . |
| 27. | .24 | .34 | .22 | .09 | -.07 | . |
| 28. | .14 | .33 | .16 | -.13 | -.04 | . |
| 29. | .29 | .13 | -.00 | .50 | .35 | . |
| 30. | .22 | .04 | .24 | -.18 | -.05 | -. |
| 31. | .45 | .28 | -.06 | .07 | .34 | . |
| 32. | .26 | .40 | .65 | .64 | .41 | . |
| 33. | .20 | .42 | .63 | .65 | .46 | . |
| 34. | .46 | -.05 | .22 | .42 | .37 | . |
| 35. | .05 | .66 | .71 | .72 | .42 | |

Append
Table
Cont.

| | 65 | 66 | 67 | 68 | 69 |
|---|---|---|---|---|---|
| 36. | .09 | .32 | .68 | .59 | .32 |
| 37. | .23 | .04 | .33 | .55 | .53 |
| 38. | .31 | .41 | .62 | .51 | .61 |
| 39. | .38 | .20 | .44 | .42 | .56 |
| 40. | -.02 | .03 | -.04 | -.10 | .09 |
| 41. | -.02 | .45 | .32 | .16 | .04 |
| 42. | .15 | .19 | .18 | -.07 | .20 |
| 43. | .10 | .09 | -.03 | -.16 | .16 |
| 44. | .27 | .22 | .41 | .44 | .30 |
| 45. | .54 | .52 | .18 | .08 | .40 |
| 46. | -.35 | .04 | -.21 | -.44 | .07 |
| 47. | .19 | .46 | -.01 | -.25 | .39 |
| 48. | .23 | .45 | .77 | .70 | .48 |
| 49. | .39 | .37 | .64 | .75 | .55 |
| 50. | .44 | .16 | .48 | .55 | .48 |
| 51. | .36 | .63 | .71 | .76 | .59 |
| 52. | .28 | .48 | .74 | .67 | .53 |
| 53. | .30 | -.09 | .14 | .35 | .05 |
| 54. | -.35 | -.14 | .07 | .21 | .05 |
| 55. | -.42 | -.22 | -.02 | -.02 | -.1 |
| 56. | -.43 | .02 | .18 | .05 | .0 |
| 57. | -.31 | .00 | .11 | .06 | .2 |
| 58. | .27 | .33 | -.03 | .24 | .3 |
| 59. | -.05 | .41 | .20 | .28 | -.0 |
| 60. | .15 | .26 | -.00 | -.29 | .2 |
| 61. | .29 | .42 | .69 | .62 | .3 |
| 62. | .54 | .70 | .82 | .79 | .6 |
| 63. | .80 | .73 | .51 | .51 | .5 |
| 64. | .51 | .69 | .80 | .77 | .6 |
| 65. | | .39 | .33 | .32 | .5 |
| 66. | .39 | | .74 | .55 | .5 |
| 67. | .33 | .74 | | .77 | .6 |
| 68. | .32 | .55 | .77 | | .5 |
| 69. | .52 | .59 | .60 | .58 | |

Analysis of Variance b
Paragraph Meaning Scor
(Sample Siz

| Groups |
| --- |
| Dullest Boys |
| Average Boys |
| Brightest Boys |
| All Boys |
| Dullest Girls |
| Average Girls |
| Brightest Girls |
| All Girls |
| All Dullest |
| All Average |
| All Brightest |
| All Children |

rouping of Standard
ird Grade
is)

| | ITA | All Methods |
|---|---|---|
| 3) | (22) | (54) |
| .6 | 36.6 | 30.8 |
| 0) | (20) | (50) |
| .7 | 45.0 | 44.3 |
| 4) | (12) | (39) |
| .6 | 45.3 | 46.4 |
| | | |
| 7) | (54) | (143) |
| .5 | 41.5 | 39.7 |
| 1) | (16) | (45) |
| .8 | 37.9 | 37.2 |
| 4) | (15) | (45) |
| .4 | 43.1 | 44.1 |
| 3) | (21) | (55) |
| .4 | 49.0 | 48.8 |
| | | |
| 8) | (52) | (145) |
| .8 | 44.1 | 43.2 |
| | | |
| 4) | (38) | (99) |
| .0 | 37.1 | 33.7 |
| 4) | (35) | (95) |
| .9 | 44.2 | 44.2 |
| 7) | (33) | (94) |
| .7 | 47.9 | 47.8 |
| | | |
| 5) | (106) | (288) |
| .7 | 42.8 | 41.8 |

| Source |
|---|
| Total |
| Method |
| IQ |
| Sex |
| |
| Method x IQ |
| Method x Sex |
| Sex x IQ |
| Method x Sex x IQ |
| |
| Error |

*Significant @ .0
**Significant @ .0

Footnote:

Bright and dull gr
Pintner-Cunningham
whole score interv
95 in average grou